THE IRON TRADE REVIEW

Volume LII CLEVELAND, MARCH 13, 1913 Number 11

Contracts Made as Rapidly as Mills Permit

But Leading Companies Slow to Take More Business—Pig Iron Weak, But Buying Movement Expected to Strengthen Conditions

Contracting for finished materials, especially plates, shapes and bars, for delivery throughout the remainder of this year, and in some cases into next year, is being done as rapidly as mills will permit. Some companies are contracting rather freely at slight advances over prevailing prices, but leading companies, which are not able to promise deliveries on present contracts before the last quarter of this year, and in some cases the first of January, are declining to book additional business. Had the policy of the United States Steel Corporation permitted, it could easily have booked orders for tonnages far in excess of 170,000 tons, the amount representing the reduction of unfilled bookings of the Steel Corporation according to the recent statement. The Corporation will erect a large Portland cement plant in connection with its steel plant now being built at Duluth. The new plant will have a capacity of about 1,500,000 barrels of cement annually and will cost about $2,000,000.

Railroad Buying

Heavy railroad buying is still a very important factor of present conditions. The Pennsylvania Lines West have entered the market for 25,000 tons of bridge material and other leading systems are also actively inquiring. The Carnegie Steel Co. has taken 25,000 steel wheels for the Norfolk & Western. The Illinois Central is about to close for 4,500 additional cars. The Illinois Steel Co. has closed an order for 45,000 tons of Bessemer rails for a northwestern system. The United States Steel Products Co. has an order for 7,500 tons of rails for Argentine railways. The Norfolk & Western has divided 9,000 tons of bridge material almost equally between the Virginia Bridge & Iron Works and the Pennsylvania Steel Co.

Pig Iron

Melters of pig iron are showing increasing interest and are more active in sounding the market. In many cases, orders do not result. In some districts, especially in Cleveland and Pittsburgh, it seems probable that there will be further softening of prices, to be followed by an active buying movement and price advances. In the east also, there is expectation on the part of buyers that prices may go a little lower and the numerous pending inquiries indicate an effort to determine lowest possible prices. Eastern cast iron pipe makers are still in the market and are making some purchases. The outlook for buying of basic in eastern territory has improved and at least one large steel company is expected in the market sometime this month. Basic in round tonnages can be bought in the east at $17.50, delivered. The sale of 5,000 tons of basic to a Pittsburgh melter indicates that the price is about $16.10, valley, or $17, Pittsburgh. There has been some increase in stocks in eastern Pennsylvania, but the general statistical position of pig iron is sound. In the south, prices are still soft and there is very little tonnage being placed.

Shapes and Plates

The principal award in structural material in the New York metropolitan district was the Lord & Taylor store to the Hay Foundry & Iron Works, requiring 6,000 tons of structural shapes and 2,000 tons of cost iron columns. In the Chicago district, contracts placed amounted to 4,225 tons, including 2,055 tons for an auditorium at Oakland, Cal., awarded to the American Bridge Co. The American Radiator Co.'s new plant at Bayonne, N. J., calling for 2,500 tons, will be erected by the Lackawanna Steel Co., Buffalo. Some weakness in fabricating prices is reported in the Chicago district. Eastern shape makers report active buying by western makers and sales continue to be made at premium prices, including, in some cases, several thousand tons. It is estimated that 600,000 tons of plates are involved in pending business and orders are being placed as rapidly as mills will take them.

Coke and Old Material

Reports from the Connellsville coke fields are that some shippers are restricting production in an effort to prevent lower prices from becoming effective. The demand has not improved and it is not at all improbable that prompt furnace coke could be obtained at as low as $2.25, ovens. Consumers continue to refuse to pay more than $2.25, ovens, for third quarter requirements, but no contract sales have been made. The old material market shows improvement in eastern territory, but is very quiet at Chicago and weaker at Cleveland.

PIG IRON BUYING

To Influence Market Was Favored by Schwab, Opposed by Gary.

James Gayley's examination as a witness in the United States Steel Corporation dissolution suit came to an end Tuesday, in New York, after he had been on the stand for six days, which is longer even than William Ellis Corey was detained. Mr. Gayley proved a very patient witness and answered with great willingness the innumerable questions put to him. He appeared relieved, however, when informed that he was excused.

In re-direct examination, Judge Dickinson again took up the project of the Carnegie Steel Co. to erect a large tube and other works at Conneaut. This project had first been discussed in 1899, said the witness, and in the spring of 1900 Mr. Carnegie was very strongly in favor of proceeding with the work of erection at once. In the summer of 1900, however, Messrs. Phipps and Lauder became doubtful as to the advisability of proceeding at once and they accordingly visited Mr. Carnegie in Europe to talk the matter over with him. The result was that Mr. Carnegie had the plans shelved indefinitely.

Judge Dickinson, however, was of the opinion that the project of establishing a tube works at Conneaut was never entirely abandoned by the Carnegie Steel Co., until the Steel Corporation was organized, and he read extracts from the minutes of the Carnegie company, dated in November and December of 1900. In the first, Mr. Schwab reported that he and Mr. Carnegie had talked over the location for the proposed tube works and had decided that Conneaut was most favorable. In the second, it was reported that the location at Conneaut had been optioned and that the company had also obtained an option on 500 acres to be used for building homes for the employes at the proposed works. Mr. Gayley adhered to his former testimony, however. These minutes, he said, showed only that the site had been obtained for a proposed plant, but said nothing as to when the plant was to be erected.

"To the best of my knowledge and recollection," he said, "the project for erecting a tube plant at Conneaut had been indefinitely suspended long before it was proposed to organize the United States Steel Corporation."

Judge Dickinson read an extract from the Carnegie minutes under date of March 6, 1900, in which Mr. Schwab reported:

"J. P. Morgan sent word for me to see him when I was in New York last week. I didn't go, however, thinking it was railroad matters he wanted to see me about. I saw Mr. Steele, one of his most confidential advisers, however, and he told me about the new tube combination. The report that we were to build a new tube plant at Conneaut, Mr. Steele told me, had caused them to hold up orders for the open-hearth furnaces for a new tube plant for the National Tube Co."

Iron Ore Holdings

"Were the holdings of the Lake Superior Consolidated Iron Mines, excluding those of both the Minnesota Iron Co. and the Oliver Iron Mining Co., larger in tonnage than the total holdings of all the other subsidiaries of the United States Steel Corporation, on Jan. 1, 1902?" asked Judge Dickinson.

"They were," said Mr. Gayley.

"Were they twice as large?"

"Yes," he replied after a little study.

Judge Dickinson then referred to two letters, one written by T. F. Cole to Mr. Gayley on Feb. 26, 1907, and the other by Mr. Gayley to Mr. Corey on March 6, 1907. These letters set forth that the actual merchantable ore involved in the Hill ore lease amounted to 159,000,000 tons. In addition, it was stated, it was believed that about 70,000,000 additional tons of low grade ore could be made use of after a washing plant had been erected. This 70,000,000 tons, Mr. Gayley testified this morning, was later expanded to nearly 100,000,000 tons. It takes on an average of 1½ to 2 tons of this low grade ore to produce a ton of the concentrated ore. The ore after washing has an iron content of from 60 to 61 per cent, he said.

The Conneaut Project

In further cross-examinatino, Mr. Severance endeavored to strengthen Mr. Gayley's testimony that the plans for the proposed tube plant at Conneaut had been indefienitely suspended by the Carnegie Steel Co. long before the formation of the Steel Corporation was thought of. He read a copy of a cablegram, which Mr. Carnegie, on July 30, 1900, sent to Mr. Schwab from Scotland. This read, "Come sure. Wish conference. Glad improvement postponed. Very important to save every dollar. Halt delivery of bonds, as we do not have to pay out any money until coupons are presented." Mr. Gayley did not remember this particular cablegram, he said, but he was sure that on several different occasions in the summer and fall, Mr. Carnegie expressed his approval of the decision to indefienitely suspend the erection of a tube plant at Conneaut.

Mr. Severance also read some minutes from the Carnegie Steel Co. records in reference to experiments on the manufacture of seamless tubes. Under date of Oct. 16, 1900, Mr. Schwab reported:

"While in Scotland, I discussed with Mr. Carnegie and with Mr. Lauder the matter of making seamless tubes, and we decided it would be worth while to experiment in this direction." Mr. Schwab further reported at this meeting that Mr. Miller, of the Shelby Tube Co., had informed him that an experimental seamless tube plant would cost $40,000; and that Mr. Miller had suggested that the Shelby and Carnegie companies enter jointly in such an undertaking, each furnishing $20,000. It was voted at the meeting that the president, Mr. Schwab, be permitted to expend $20,000 in this direction.

Mr. Severance read an extract from the minutes of the Steel Corporation executive committee, dated May 6, 1903, in which Mr. Schwab expressed his belief that the Steel Corporation ought to make it a regular policy to purchase pig iron in the outside market from time to time, and at high prices, in order to keep the market firm. This, he said, would prove of great advantage to the Corporation, and such purchases should be made even if the Corporation had to blow out its own furnaces to do it. Judge Gary, who was present at the meeting, expressed his disapproval of such a course and thought that the Steel Corporation should purchase only such pig iron as it actually needed, and hat no more than the market price should be paid for it.

"I was in favor of the plan outlined by Mr. Schwab," said Mr. Gayley, when questioned by Mr. Severance. Mr. Gayley had stated previously in his testimony that Judge Gary's views on this policy prevailed.

Edward T. Stotesbury, head of the banking firm of Drexel & Co., Philadelphia, was on the stand for a short time. In reply to Judge Dickinson's queries regarding the connection between J. P. Morgan & Co., of New York, and Drexel & Co., of Philadelphia, Mr. Stotesbury said that they are two separate firms, but that the partners in one house are also partners in the other. He has been a member of J. P. Morgan & Co., he said, ever since that house was founded.

On July 1, 1901, Mr. Stotesbury said, Drexel & Co. held 1,306 21/100 shares of Pennsylvania Steel Co. stock and 32,480 2/5 shares of Cambria Steel Co. stock. On Sept. 30, 1911, this company held 519 shares of the former and not over 100 shares of the latter.

RYAN RE-ELECTED

While Others Convicted in Dynamite Trials Sit in the Convention.

Indianapolis, March 11.—Over the protest of a large number of delegates and after a bitter fight of more than two hours on the convention floor, Frank M. Ryan has been re-elected president of the International Association of Bridge and Structural Iron Workers. The convention of the organization has adjourned.

J. B. Barnes, of San Francisco, was the only candidate against Ryan, and the vote was 30 to 20. It is said privately by some of the delegates that Ryan was chosen on account of sympathy as some of the iron workers are inclined to regard him as a martyr. Some of the prominent leaders in other labor organizations had urged that the iron workers not elect to office any of the men convicted for complicity in the dynamite outrages.

Ryan, it is announced, is to serve only to September, as a referendum for the election of officers will be held during the summer. It is said that Ryan will not be a candidate for re-election in the referendum. Among the candidates will be Barnes and Joseph McClory, of Cleveland, who was acting secretary after Herbert S. Hockin was sent to prison.

Harry Jones, of New York, was elected secretary-treasurer; McClory, first vice president, and P. J. Morrin, of St. Louis, was re-elected second vice president. Morrin was one of the men indicted by the federal grand jury, but was released early during the dynamite trial. J. P. Barry, Paul Schupe and Peter J. Smith, men convicted during the trial, attended the convention and took a prominent part. Ryan was also chosen as a delegate to represent the organization at the convention of the American Federation of Labor.

Members elected to the executive board were P. J. Vaughn, San Francisco; John A. Johnson, Newark, N. J.; D. J. O'Shea, Niagara Falls, and Frank McKinney, Phoenix, Ariz.

The convention decided to raise $50,000 for the benefit of members in prison, $25 a week to be paid each family while a member is actually serving time. A resolution was also adopted to raise $100,000 in monthly installments to finance new trials, if the convicted iron workers are granted them. There is already $90,000 in the treasury for the purpose.

Each session of the convention was held behind closed doors, closely guarded by iron workers. Newspaper men who asked for information concerning the meetings were cursed and insulted. The next meeting will be held at Peoria, Ill., the first week in September, 1915.

NEW PLANT

Of Apollo Steel Co. Will Be in Operation Shortly.

The Apollo Steel Co., Apollo, Pa., is installing machinery at its new mill in that city, and expects to be operating the latter part of April. The plant, when completed, will consist of six hot mills, four annealing furnaces, two galvanizing pots, and a corrugating machine. The company will manufacture black, galvanized and corrugated iron and steel sheets. The plant is modern in every particular, being equipped and operated with electricity.

Officials of the company advise that prospects for the future are bright; by the time operation begins the company will have enough orders on its books to assure maximum operation through the second quarter of the year, and contracts for third quarter delivery already are being taken. H. M. Davis, 702 Betz building, Philadelphia, is eastern representative and C. J. Walke, Apollo, Pa., is in charge of the Pittsburgh and western districts.

NEARLY FIVE MILLIONS

Estimated Value of Alabama Consolidated Properties.

Birmingham, March 10.—The valuation of plants, property, cash and equipment of the bankrupt Alabama Consolidated Coal & Iron Co. was estimated at $4,779,496.13 in a report in the court of Referee in Bankruptcy Edmund H. Dryer, by the three appraisers recently appointed by the referee, W. S. Lovell, H. A. Turner and P. G. Ault, for that purpose. The report shows:

Coal mines, property mines, railroads and equipment at Lewisburg	$ 930,000.00
Same at Brookwood and Searles	1,250,000.00
Red ore property, mines and equipment at Attalla Etowah.	400,000.00
Same at Gate City	700,000.00
Brown ore property in Pilk co., Ga.	32,000.00
Two blast furnaces in Gadsden, complete	650,000.00
Two blast furnaces and ore mines at Ironaton	250,000.00
Lime quarry at Rock Springs, Ala.	75,000.00
Miscellaneous farm lands, etc.	140,000.00
Free assets as per schedule	352,496.13
Total	4,779,496.13

Free assets, including 2,804 tons of pig iron at $12.18 per ton, are valued at $352,496.13.

HIGHER DAILY RATE

For Corporation Bookings, But Reduction in Unfilled Tonnage.

A further reduction of 170,654 tons in its unfilled bookings resulted from the February operations of the United States Steel Corporation, according to the statement made public March 10. This decline about represents what had been expected, inasmuch as new bookings of the leading interest have been of less volume in the normally quieter market of the past two months, while shipments have continued at a record pace. The new business entered in February, however, it is understood, was at a higher daily rate than in January. During the past two months, the decline in book tonnage has reached 275,450 tons, which, in view of the large accumulation of business of the previous six months, represents but a very slight percentage.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentage of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, tonnage.	Change, per cent.
Feb. 28, 1913	7,656,714	170,654—	2.18—
Jan. 31, 1913	7,827 368	104,796—	1.32—
Dec. 31, 1912	7,932,164	79,281+	1.01+
Nov. 30, 1912	7,852,883	258,502	3.40+
Oct. 31, 1912	7,594,381	1,042,874+	15.33+
Sept. 30, 1912	6,551,507	388,132+	6.29+
Aug. 31, 1912	6,163,375	206.296+	3.46+
July 31, 1912	5.957,079	149,773+	2.58+
June 30, 1912	5,807,346	56,363+	0.98+
May 31, 1912	5,750,983	86,983+	1.52+
Apr. 30, 1912	5.664,885	360,044+	6.97+
Mar. 31, 1912	5,304,841	149,359—	2.79—
Feb. 29, 1912	5.454,200	74,479+	1.38+
Jan. 31, 1912	5,379,721	294,960+	5.71+
Dec. 31, 1911	5,084,761	942.806+	23.24+
Nov. 30, 1911	4,141,955	447.627+	12.06+
Oct. 31, 1911	3,694,328	83.011+	2.25+
Sept. 30, 1911	3,611,317	84,668—	2.34—
Aug. 31, 1911	3.695,985	111,900+	3.33+
July 31, 1911	3,584,085	223,027+	7.16+
June 30, 1911	3.361,058	247,871+	7.96+
May 31, 1911	3,113,187	105,617—	3.28—
Apr. 30, 1911	3,218,704	228.597—	6.63—
Mar. 31, 1911	3,447,301	46.758+	1.37+
Feb. 28, 1911	3,400,543	289.624+	9.31+
Jan. 31, 1911	3,110,919	436.162+	16.30+
Dec. 31, 1910	2.674,757	85,656—	3.09—
Nov. 30, 1910	2,760,413	111,536—	3.88—
Oct. 31, 1910	2.871,949	286,157—	9.12—
Sept. 30, 1910	3.159,106	379,088—	10.74—
Aug. 31, 1910	3,537,128	433.803—	10.92—
July 31, 1910	3,913,931	286,863—	6.72—

Adjust Wage Scale

Youngstown, O., March 11.—The bi-monthly examination of the sales sheets of the Republic Iron & Steel Co. and Western Bar Iron Association showed that the price of bar iron the past two months was 1.45c, this average entitling puddlers to the prevailing rate of $6.60 a ton.

These examinations only affect the Amalgamated Association of Iron, Steel and Tin Workers, the Sons of Vulcan working under a flat rate of $6 a ton.

PITTSBURGH

Great Tonnage of Plates Pending

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., March 11.

Consumers of hot rolled material are beginning to show more interest in requirements for the third and fourth quarter of the year, and there has been some demand for 1914 delivery. Mills, in some instances, are six and seven months deferred in shipments of plates, shapes and bars, and a large number of consumers feel that it is necessary to contract through the entire year for the sake of protection. Specifying has continued at a heavy rate.

It is estimated that 13,000 cars, and about 600,000 tons of plates and shapes are involved in pending inquiries; these figures do not include material, bids on which have not been asked.

The pig iron market is beginning to show some activity, and the scrap market is firmer than it was a week ago. Coke continues quiet, and stationary in price. Wire products are not so strong as some of the other finished lines.

Pig Iron.—Prospects of an active buying movement of steel-making pig iron are much brighter than they have been at any time this year, although the heaviest melters have not entered the market, in a definite way. One of the local steel companies has bought 2,500 tons of second quarter and the same tonnage of third quarter basic from an Ohio maker at about $16.10, valley, which represents a concession from recent prices. A local steel casting company has obtained 300 tons of second quarter Bessemer at $17.25, valley, which appears to be the prevailing price of this grade. Several inquiries involving small tonnages of Bessemer and low phosphorus pig iron have come out the last few days, and one of the foundry interests in this district is asking bids on 2,000 tons of second and third quarter foundry iron. This grade is selling all the way from $17 to $17.50, valley.

The Hannah stack of the Republic Iron & Steel Co., at Youngstown, O., went out of blast a few days ago for relining. Frequent reports are heard in the trade that the stack of the New York State Steel Co., at Buffalo, will go out shortly, although advices relative to the operation of this furnace are conflicting. The following prices represent the market for shipment during the first half of the year. Not enough sales for delivery after July 1 have been made to indicate the position of the market after that date. The following prices prevail:

(First Half.)

Bessemer, valley	$17.25
Bessemer, Pittsburgh	18.15
Basic, valley	16.10 to 16.25
Basic, Pittsburgh	17.00 to 17.15
No. 2 foundry, valley	17.00
No. 2 foundry, Pittsburgh	17.90
Malleable, valley	17.00
Malleable, Pittsburgh	17.90
Gray forge, valley	16.25 to 16.50
Gray forge, Pittsburgh	17.15 to 17.40

Ferro Alloys.—The market is quiet and shows some signs of weakness. It is not at all improbable that ferro-manganese for forward delivery could be obtained at $63.50, seaboard, and for prompt delivery at $64, according to frequent expressions heard in the trade. A continued period of quiet is responsible for the slight weakness. Fifty per cent ferro-silicon continues to be firm at $75, Pittsburgh, for both prompt and forward shipment. Comparatively little new tonnage is being moved.

We quote 80 per cent ferro-manganese at $64 to $65, Baltimore, for prompt and forward shipment. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $75, Pittsburgh, for prompt and forward delivery; 12 to 13 per cent, $26, 11 to 12 per cent, $25, 10 to 11 per cent, $24; 9 to 10 per cent, $23, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

On ferro-titanium we quote 8 cents per pound for carload lots; 10 cents per pound for 2,000 pound lots and over, and 12½ cents per pound in lots up to 2,000 pounds.

Plates.—It is estimated by observers in close touch with the market conditions that 13,000 railway cars are involved in pending transactions and more than 600,000 tons of plates and shapes are included in inquiries of a definite nature. None of the inquiries for cars is particularly large, and they are well scattered. Mills in a position to fill orders promptly advise that they continue to obtain 1.90c and 2c for plates and material for delivery within 60 days is being sold at 1.55c and 1.60c.

The East Jersey Pipe Co. has placed an order with the Carnegie Steel Co. for about 1,800 tons of lock bar steel pipe, 54 inches in diameter, to be used at Minneapolis, and the Carnegie company also has received an order from the East Jersey company for three miles of 36-inch steel pipe for shipment to Winnipeg, Can., this order being in addition to one for nine miles taken some time ago. It is understood that the Canadian project will require at least 50,000 tons, although orders may not be placed until the fall of this year or the spring of 1914.

The Jones & Laughlin Steel Co. has taken an order for 300 tons of punched plates to be used in connection with the Isthmian canal project. Booth & Flynn, who have the contract for the sewer at Newark, N. J., requiring about 2,500 tons of plates, have not yet placed orders for this material. Car builders in this district have taken no especially large orders this week. Manufacturers in some instances are six months deferred in shipments. The following quotations continue to prevail:

Standard steel plates ¼ inch thick, 6¼ to 100 inches, 1.45c to 1.60c for forward shipment and 1.65c to 1.90c for prompt shipment. For extras, see card of Sept. 1, 1909.

Sheets.—Some manufacturers advise that specifications against contracts last week were not quite so heavy as those received the week previous, although the decrease is so slight that it is almost insignificant. Specifications at the beginning of the week continue to come in at a phenomenally heavy rate, and in some quarters it is predicted that the present month will exceed February in every respect. Jobbers are showing more anxiety about third quarter material and are ordering as much as mills care to sell.

The Apollo Steel Co., which has a new six-mill plant at Apollo, Pa., advises it will be in operation early in April. The company already has taken enough orders to assure maximum operation through the second quarter and has opened its books for the third quarter of the year. Prices are being well maintained, and premiums con-

tinue to be paid for prompt delivery. The following quotations prevail:

Flat Sheets

Black Sheets.—Nos. 10-12 gage, $2 per 100 pounds: Nos. 13-14 gage, $2.05; Nos. 15-16 gage, $2.10; Nos. 17-21 gage, $2.15; Nos. 22-24 gage, $2.20; Nos. 25-26 gage, $2.25; No. 27 gage, $2.30; No. 28 gage, $2.35; No. 29 gage, $2.40; No. 30 gage, $2.50.

Tin mill sizes, Nos. 15-16 gage, $2.10 per 100 pounds; Nos. 17-21 gage, $2.15; Nos. 22-24 gage, $2.20; Nos. 25-27 gage, $2.25; No. 28 gage, $2.30; Nos. 29-30 gage, $2.35; Nos. 30¼-31 gage, $2.40; No. 32 gage, $2.45.

Blue Annealed.—Nos. 3-8, $1.70 per 100 pounds; Nos. 9-10, $1.75; Nos. 11-12, $1.80; Nos. 13-14, $1.85; Nos. 15-16, $1.95.

Galvanized.

Nos. 10-11 gage, $2.50 per 100 pounds; Nos. 12-14 gage, $2.60; Nos. 15-16 gage, $2.75; Nos. 17-21 gage, $2.90; Nos. 22-24 gage, $3.05; Nos. 25-26 gage, $3.20; No. 27 gage, $3.35; No. 28 gage, $3.50; No. 29 gage, $3.65; No. 30 gage, $3.80.

Roofing Sheets

Net extras on all gages per 100 pounds.

Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c; 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with or without cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage, inc., 15c.

Tin Plate.—Specifying continues extremely heavy and there has been some new buying this week. Manufacturers have advanced prices of heavy coated terne plates about $3 a ton, and the differential on enameling stock has been raised from 15 cents to 25 cents a hundred pounds. Common terne plates remain unchanged in price. Heavy shipments are being made to consumers in all parts of the country, and according to reports can factories are beginning to put on extra forces in order to meet the heavy demand during the spring, summer and fall months. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.60, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Traction line companies are beginning to cover this year's requirements, and a number of fairly good orders have been placed with mills rolling rails in this district. Traction line interests continue to buy Bessemer sections, which is gratifying to rail makers, as it enables them more evenly to balance mill tonnages. Specifying by leading railways continues at a heavy rate, and mills will be unable to fill some contracts until the latter part of the third quarter. Railroad spikes continue to be in good demand, but there is little or no new buying. Rails are quoted as follows with the base price of open-hearth steel sections at 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carload and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, base, Pittsburgh; track bolts, 2.40c to 2.50c, base, Pittsburgh.

Railroad Spikes

4½, 5 and 5½ and 9-16	1.90c
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7-16	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x 5-16	.60
2 x 5-16	.80

Billets and Sheet Bars.—It develops that the purchase of 6 x 6 billets by the National Tube Co. at $29, maker's mill, about which so much was said last week, was made a couple of weeks ago and mentioned in the Feb. 27 issue of THE IRON TRADE REVIW. The situation continues acute, and finishing mills are suffering to a considerable extent. No sales of any importance have been made this week. Prevailing quotations, which have been considered nominal for several weeks, accurately represent the market conditions so far as possible. Prices are:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $29.00, with the usual rolling billets, $29.50. Bessemer sheet and tin bars are quoted at $29.50 and open-hearth sheet bars are quoted $30, f. o. b. Pittsburgh and Youngstown, with full freight to destination added. Forging billets are quoted at $36, Pittsburgh.

Hoops and Bands.—Mills continue to receive heavy specifications for steel hoops and bands, although there is little or no new buying. The leading interest has not yet opened books for third quarter delivery. Prices follow:

Hoops in carload lots, 1.60c to 1.70c, Pittsburgh, in less than carload lots, 1.65c to 1.75c; bands, 1.40c, base, with net extras, as per standard steel.

Merchant Bars.—According to expressions heard in the trade, agricultural implement interests will not begin to cover needs for the year beginning July 1, 1913, for at least 20 or 30 days, although inquiries may come out in the Chicago district somewhat earlier. Some manufacturers are just beginning to fill orders taken last fall and, if specifying continues at the present heavy rate, deliveries will not improve until the latter part of the year.

Some shafting interests have placed orders for the entire year, but others have displayed no inclination to buy beyond July 1. There is no new buying of shafting, although specifications have not fallen off. Iron bars continue in strong demand, and prices have not changed. This product is quoted at a range from 1.70c to 1.80c, although some mills are refusing to sell at less than 1.75c. The following prices prevail:

Common iron bars, 1.70c to 1.80c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds and not less than 1,000 pounds of a size, 0.15 advance, less than 1,000 pounds of a size, 0.35. Cold rolled and ground shafting, 58 per cent off in carloads and 53 per cent in less than carloads delivered in base territory.

Muck Bar.—The muck bar market offers no new developments. It is quoted nominally at $32, Pittsburgh.

Bolts, Nuts and Rivets.—The market continues firm and, so far as can be learned, prevailing quotations are not being shaded in any instance in this district. Mills advise, however, that demand is not so heavy as it was two or three weeks ago. Deliveries are so badly deferred, however, that makers will welcome an opportunity to catch up somewhat in deliveries. The following prices and discounts prevail:

Rivets

Button head structural rivets, 2.20c, Pittsburgh, cone head boiler rivets, 2.30c. Small rivets 75, 10 and 10 off.

Bolt and Nut Discounts.

(Delivered with a 20-cent freight radius.)

Carriage bolts, ½ x 6 inches, smaller and shorter, rolled threads, 75 and 10; cut threads 75 and 5; larger and longer, 70 and 2½.

Machine bolts with hot pressed nuts, ½ x 4 inches, smaller and shorter, rolled 75, 10, and 5; cut, 75 and 10; larger and longer, 70 and 7½.

Gimlet and cone point lag or coach screws, 80 and 10.

Hot pressed square, blank or tapped nuts, $5.70 off list; hot pressed hexagon blank or tapped, $6.30.

Cold pressed C. & T. square, blank or tapped, $5.70 off; hexagon, blank or tapped, ½-inch and larger, $6.60 off; ½-inch and smaller, $7.20 off.

Structural Shapes.—The American Bridge Co., has taken 6,000 tons for the Ohio connecting bridge to be built by the Pennsylvania Lines West, at Sheridan, Pa. This order is in addition to one for 7,000 tons placed with the American company by builders of the bridge several weeks ago. The McClintic-Marshall Construction Co. has taken the general contract for a two-story foundry building for the Westinghouse Air Brake Co., this city, involving 500 tons. The Jones & Laughlin Steel Co. has received an order for steel for a building to be built by the Wilcox-McKim Motor Potts Co., at Saginaw, Mich. No other especially large contracts have been awarded fabricators in this district this week. Specifications against contracts continue heavy, and consumers are beginning to show greater interest in requirements for the last half of the year. Shapes are being sold at a range from 1.45c to 1.60c, according to delivery. Prices follow:

Standard structural shapes, 1.45c to 1.60c for forward shipment. For extras see card of Sept. 1, 1909.

Merchant Pipe.—No especially large orders have been taken by mills in

this district this week, but an unusually large number of small orders have been placed which, in the aggregate, represent a fairly heavy tonnage. Consumers are urging manufacturers for material, and considerable complaint has been heard on account of badly deferred shipments. Demand for oil country goods continues to feature the market. The prevailing discounts to jobbers, which are subject to the usual preferential discount to the large buyer, are as follows:

Iron and Steel Pipe Basing Prices

STEEL.

	Black. Butt.	Galv. Butt.	Black. Lap.	Galv. Lap.
⅛, ¼ and ⅜ inch..	73	52½	..	..
½ inch	77	66½	..	..
¼ to 3 inch	80	71½	..	..
2 inch	..	..	77	68½
2½ to 6 inch	..	..	79	70½
7 to 12 inch.....	..	..	76	65½
13 to 15 inch	..	..	53	..
Extra Strong Plain Ends, Card Weight.				
⅛, ¼ and ⅜ inch..	68	57½	..	..
½ inch	73	66½	..	..
¾ to 1½ inch	77	70½	..	..
2 to 3 inch	78	71½	..	..
2 inch	..	..	74	65½
2½ to 4 inch.....	..	..	76	67½
4½ to 6 inch	..	..	75	66½
7 to 8 inch	..	..	68	57½
9 to 12 inch	..	..	63	52½
Double Extra Strong Plain Ends, Card Weight.				
½ inch	63	56½	..	..
¾ to 1½ inch	66	59½	..	..
2 to 2½ inch	68	61½	..	..
2 inch	..	..	64	57½
2½ to 4 inch	..	..	66	59½
4½ to 6 inch	..	..	65	58½
7 to 8 inch	..	..	58	47½

IRON.

⅜ inch	66	47	..	..
½ inch	70	57	..	..
¾ to 2½ inch.....	73	62	..	..
2½ to 6 inch.....	..	..	71	62
7 to 12 inch.....	..	..	69	56
2 inch	..	..	69	59
Extra Strong Plain Ends, Card Weight.				
⅜ inch	64	53	..	..
½ inch	68	61	..	..
¾ to 1½ inch.....	72	63	..	..
2 and 2½ inch.....	73	64	..	..
2 inch	..	..	67	59
2½ to 4 inch.....	..	..	71	62
4½ to 6 inch.....	..	..	70	61
7 to 8 inch.....	..	..	64	54
9 to 12 inch	..	..	59	48
Double Extra Strong Plain Ends, Card Weight.				
½ inch	58	50	..	..
¾ to 1½ inch.....	61	53	..	..
2 and 2½ inch.....	63	55	..	..
2 inch	..	..	56	50
2½ to 4 inch.....	..	..	61	55
4½ to 6 inch.....	..	..	60	54
7 and 8 inch.....	..	..	53	43

Plugged and reamed pipe is furnished at 2 points higher price either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—Mills are receiving heavy specifications for locomotive boiler tubes, and shipments are badly deferred. Makers of iron boiler tubes continue to quote discounts that went into effect Jan. 1. Iron and steel boiler tube discounts follow:

IRON AND STEEL BOILER TUBES BASING PRICES.

(To Jobbers.)

	Steel.	Iron.
1¾ to 2 inch.....	60	48
2¼ inch	57	44
2½ and 2¾ inch.....	63	53
3 and 3¼ inch.....	68	55
3½ to 4½ inch.....	70	58
5 and 6 inch.....	63	..
7 to 13 inch.....	60	..

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire.—Manufacturers of wire products advise that spring buying has not yet begun, although there is some indication of activity along this line in the near future. Wire does not reflect the strength displayed by some products, although prices are being firmly maintained in every instance.

Wire products have not been advanced, and it does not seem probable that prices will be changed for some time at least. Cut nails continue to be quoted at 1.70c. Prices follow:

Wire nails, jobbers' carload lots, $1.75, retailers' carload lots, $1.80; cut nails (western makers), jobbers' lots, $1.70; painted barb wire, jobbers' carload lots, $1.75; retailers' carload lots, $1.80, with 40c for galvanizing; plain wire to jobbers in carloads, $1.55; and to dealers, in carloads, $1.60; polished staples, $1.75; galvanized staples, $2.15.

Wire Rods.—Few mills are able to offer wire rods, finding it impossible to roll surplus tonnages. No sales have been made for several weeks, and the prevailing $30 quotation is considered nominal.

Coke.—The coke market offers no new developments. Spot sales have been infrequent this week, and no contracting has been done. Forty-eight-hour fuel appears to have settled at about $2.50, ovens, although some dealers believe that it would be necessary to shade this figure at least 10 cents in order to sell. There has been scarcely any demand. A couple of transactions for third quarter coke are pending, but shippers are refusing to sell at offers made by consumers. Seventy-two-hour coke continues quiet, but prices appear to be firm.

The Connellsville *Courier* for the week ending March 1, says production was 432,645 tons, a decrease of about 9,000 tons, compared with the week before. The output of furnace ovens decreased 5,880 tons, and that of merchant ovens decreased 3,120 tons. Shipments decreased 276 cars. The following quotations continue to represent the market:

Connellsville furnace	$2.50
Connellsville furnace contract.....	2.50 to 2.75
Connellsville foundry	3.50
Connellsville foundry contract.....	3.50 to 3.75

Old Material.—The iron and steel scrap market is again quiet after a short period of activity, during which time one of the heaviest consumers in this district bought considerable tonnage of heavy melting steel at $14.50, delivered. Since that time, however, small tonnages have been sold at $14.25, and it appears as if the market today ranges from $14.25 to $14.50. It was generally expected that other consumers would figure in the buying movement, but such was not the case, as no further negotiations have been closed, and no inquiries are pending. There is more indication of a buying movement than was the case two weeks ago, and dealers are confident that conditions will improve before the end of the month. Low phosphorus scrap has weakened, sales this week having been made as low as $17.25, and dealers have been unable to obtain more than $17.75. Machine shop turnings continue weak, consumers having no difficulty in obtaining this material at $9.25. Prices for delivery to mills in this district follow:

Heavy melting scrap	$14.25 to 14.50
Rerolling rails	16.50 to 17.00
Malleable	14.00 to 14.50
Agricultural malleable	12.75 to 13.00
Bundled sheet scrap.....	11.75 to 12.25
Iron axles	26.00 to 26.50
Old iron rails.....	16.25 to 16.50
Stove plate	11.00 to 11.50
No. 1 wrought scrap.....	15.25 to 15.50
Old car wheels.....	16.00 to 16.50
Low phosphorus	17.25 to 17.75
Machine shop turnings.....	9.25 to 9.75
No. 1 busheling	14.00 to 14.50
Country mixed	10.75 to 11.00
Cast borings	10.25 to 10.50
No. 1 cast scrap.....	14.75 to 15.00

Will Install Stock Bins and Trestles

Arthur G. McKee, consulting and contracting engineer, Cleveland, is preparing plans for an installation of stock bins and trestles for the Clinton Iron & Steel Co., Pittsburgh. Eleven ore and stone bins of the Baker suspension type, and three storage trestles will be constructed. Steel materials will be used throughout for both bins and trestles.

Mr. McKee has taken a contract for the construction of stock bins and storage trestles for the Marting Iron & Steel Co., and the Ironton Iron Furnace Co., both of Ironton, O. Eleven 110-ton capacity ore and stone bins of the Baker suspension type, and coke bins having a capacity of 300 tons, will be provided at each plant. In connection with the improvements at the Marting plant, one of the two furnace stacks will be equipped with a skip bridge and complete auxiliary equipment. Scale cars and transfer cars will be provided at both plants and an electric power plant installed at the Marting plant.

Approximately 1,500 tons of structural materials, plate and castings will be required.

CHICAGO

Shading on Some Finished Products

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., March 11.

A noticeable weakness in the price of fabricated steel has developed, which seems to apply, however, only to small jobs. This is probably due to the fact that fabricators who are covered by mill contracts are able to cut prices on the small jobs, owing to the difference of $9 a ton between mill and store quotations. Figuring on a store basis, they are able to cut the price several dollars a ton and still realize a good margin of profit. A tendency on the part of makers of axles, tie plates and spikes to shade the market is also apparent, applying especially to the last named material. The market for structural rivets is also weak, quotations on a basis of 2c, Pittsburgh, being reported. It is probable, however, that 2.10c, Pittsburgh, is nearer the minimum.

Pig Iron.—The market remains very quiet, such quotations as have appeared failing to materialize into definite business. Inquiries on northern specifications for lots of 1,200 tons, 2,000 tons, 2,000 to 5,000 tons and 6,000 tons have been noted, but have all been withdrawn as soon as prices were obtained. The Baker Mfg. Co. has also decided not to cover at present. The Lindemann & Hoverson Co. inquiry, previously reported as being for 500 tons, has been cut down to 200 tons. A sale of 1,500 tons of southern iron slightly off grade is noted. A melter in Janesville, Wis., is inquiring for from 600 to 800 tons of iron and an agricultural melter is asking for quotations on 200 tons of 8 per cent silicon. A prominent consumer in Indiana has also asked for last half quotations on a heavy tonnage, which will probably not be covered at present.

The disposition of both buyers and sellers remains unchanged, the former being disposed to await further developments. On southern iron, $13.50, Birmingham, can be obtained from one interest at that point, and iron can be had from Tennessee stacks on a basis of $13, Birmingham. Northern producers continue to quote low prices on misfit iron, but no sales of contract tonnages for forward delivery have been noted.

The following prices represent the market for Chicago delivery except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces:

Lake Superior charcoal	$18.00 to 19.25
Northern foundry No. 2	17.50 to 18.00
Southern foundry No. 2	17.35 to 17.85
South'n Silveries, 5 per cent sil.	19.85
Jackson co. silveries 8 per cent	21.40
Malleable Bessemer	17.50 to 18.00
Alabama basic	18.85

Merchant Bars.—One of the largest producers in this territory has received four orders from widely different sections of the country, aggregating 380 tons of iron bars on a basis of 1.60c at the mill. The market for this material is very firm in spite of a reported decrease in new business. This is equally true of steel bars. Although no definite business has been transacted, agricultural interests are sounding the market in the hope of price concessions. It is thought, however, that business with most of these buyers will be done on a basis at least as high as 1.40c, Pittsburgh, for steel bars, one large western producer having made known its willingness to take business for future delivery at that figure. Store prices are very strong.

We quote, f. o. b. Chicago, as follows:

Bar iron 1.60c to 1.62½c; hard steel bars, rerolled, 1.65c to 1.75c; soft steel bars, bands and small shapes, 1.63c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 58 per cent off list for carload lots, 53 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.95c per pound base; soft steel bars, 1.95c per pound base; soft steel hoops, 2.50c, full extras.

Structural Material.—A noticeable weakness in the price of fabricated steel has developed, which seems to apply, however, only to contracts for small jobs. One reason for this condition is that the smaller shops are prevented from taking the larger contracts owing to the fact that they are not covered by contracts with the mills for material. They must, therefore, compete for smaller jobs in order to maintain their organizations, steel for small jobs being obtainable from store. This not only causes a weakness in the price of fabricated steel, but also greatly reduces the fabricators' margin of profit on account of the high price for the material out of stock. In addition, fabricators who are covered with the mills are able to quote much lower prices owing to the difference of about $9 a ton between mill and store prices. Figuring a small job on a store basis, they are able to cut the fabricated price several dollars a ton and still make a good profit. The structural contracts which were placed during the past week totaled 4,225 tons, which is considerably better than has been noted for some time. This includes 2,055 tons taken by the leading interest from the city of Oakland, Cal., for an auditorium at that place. The city of Oshkosh, Wis., has let a contract for 729 tons of structural material to the Chicago Steel Products Co. for a lift bridge over the Fox river. McClintic-Marshall Construction Co. has taken 925 tons from the Bethlehem Steel Co., for a conveyor bridge at South Bethlehem, Pa., and the Decatur Bridge Co. has taken 403 tons from the Federal Plate Glass Co. for buildings at Ottawa, Ill. H. F. Grimm, New Orleans, has let a contract for 113 tons for the erection of an apartment building in that city to the Phoenix Iron Co.

We quote, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.68c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles over 6 inches, $2.15 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $2.05 per 100 pounds, base; channels, 3 inches and larger, $2.05 per 100 pounds, base.

Rails and Track Fastenings.—Western railroads are still inquiring for small tonnages of rails as supplementary orders to their previous purchases. Rail specifications are exceedingly heavy and the mills are being pushed for early deliveries. Rail prices in this territory are naturally very firm, particularly as regards open-hearth steel, the capacity of which has been exhausted. An increasingly large tonnage of Bessemer rails is being specified in order to obtain delivery more promptly. Some weakness, however, is apparent in track fastenings, a noticeable ten-

dency on the part of makers of axles, tie plates and spikes having developed recently. Spikes are now quotable at from 1.90c to 1.95c in this market and it is probable that some producers would be willing to shade the former price if an especially desirable tonnage were involved. Angle bars and bolts, however, remain very firm.

We quote light rails, f. o. b. Chicago, as follows:

Light rails, carloads, 25 to 45-pound, 1.30c; 16 to 20-pound, 1.35c; 12-pound, 1.40c; 8-pound, 1.50c.

Light section relayers, 45 pounds and under, subject to inspection, $22 to $24; standard section relaying rails, subject to inspection.

Track fastenings, f. o. b. Joliet, are as follows:

Angle bars, 1.50c; railroad spikes, 1.90c to 1.95c; smaller size spikes, 1.75c, base; track bolts with square nuts, 2.30c to 2.40c.

Plates.—Activity in car buying is somewhat less apparent in this market, most of the inquiry noted being from eastern lines. The Erie has ordered 1,500 freight cars from the Western Steel Car & Foundry Co., and the Pennsylvania Lines West are in the market for 87 passenger cars. A let-up in railroad buying would unquestionably bring a great relief to the mills in this territory, both in this material and in structurals. New business from other sources is comparatively light, which may be largely due, however, to the inability of mills to take any mill tonnage for anything like an early delivery. Work is being pushed forward rapidly on the Inland Steel Co.'s new mill, which will be in operation about July 1. This company will start one of its new 60-ton open-hearth furnaces this week and while this increase in capacity will not bring any material relief, it will be of great assistance in taking care of the heavy run of specifications.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.68c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $2.05.

Bolts, Nuts and Rivets.—The market for structural rivets shows more evidence of weakness, practically no business being placed on a basis of 2.20c, Pittsburgh. Quotations on a basis of 2c, Pittsburgh, are reported, but one of the large western producers has taken 150 tons of rivets at 2.10c, which would indicate that the latter figure is about the minimum for any material tonnage. Bolts and nuts are very firm and producers are unable to make deliveries in any shorter time.

We quote prices on bolts, nuts and rivets as follows:

Rivets

Structural rivets, ⅜ to 1¼ inches, 2.28c to 2.38c, base, Chicago, in carload lots; boiler rivets, 0.10c additional.

Bolt and Nut Discounts

Carriage bolts up to ⅜ x 6 inches, rolled thread, 75-10; larger sizes, 70-2½.

Machine bolts, up to ⅜ x 4 inches, rolled thread, 75-10-5; cut thread, 75-10; larger sizes, 70-7½.

Hot pressed nuts, square head, $5.70 off per cwt.; hexagon, $6.30 off per cwt.

Sheets.—The sheet market is firmer and the tendency to shade prices even on the part of the smaller mills is decidely less evident. This may be due in part to the indications of spring activity which are already apparent. The decided shortage in raw steel capacity in this territory cannot help but have a marked effect on the market for this material as well as for other lines.

We quote, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.25c; No. 12, 2.20c. Box annealed, No. 28, 2.90c. Galvanized No. 28, 4.15c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The nearer approach of spring is causing even more activity in the market for wire products and is bringing in heavy specifications from both jobbers and manufacturers, as well as numerous inquiries involving new business. Prices are very firm, the tendency being upward.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.03, with 40c for galvanizing; plain wire, jobbers, carload lots, $1.73; retailers' carload lots, $1.78.

Merchant Pipe and Tubes.—There is but little change in the market for merchant pipe and tubes, and prices are firm. Spring business is beginning to be felt and makers in this territory are working to clean up old business as far as possible in order to avoid further congestion.

We quote, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	69.2	48.2	62.2	42.2
⅜ inch	73.2	62.2	66.2	....
½ inch to 1½ inch	76.2	67.2	69.2	57.2
Lap.				
2 inch	73.2	64.2	65.2	54.2
4½ inch to 6 inch..	75.2	66.2	67.2	57.2
Card Weight.				
7 inch to 12 inch...	72.2	61.2	65.2	54.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	64.2	52.2	58.2	46.2
½ inch	69.2	57.2	63.2	51.2
2 inch to 3 inch....	74.2	62.2	....	....
Lap.				
2 inch	70.2	58.2	64.2	52.2
7 inch to 8 inch...	64.2	52.2	58.2	46.2
Double Extra Strong.				
Butt.				
½ inch	57.2	45.2	....	....
¾ inch to 1½ inch.	60.2	48.2	....	....
Lap.				
2 inch	58.2	48.2	....	....
4½ inch to 6 inch..	59.2	47.2	....	....
7 inch to 8 inch....	52.2	40.2	....	....

Tubes

Diameter.	List price.	Lap weld steel, per cent off.	Charcoal iron, per cent off.	Cold seamless, per cent off.
1	30	..	..	57½
1¼	28	..	..	52½
1½	27	..	..	47½
1¾	22	51	40	35
2	20	51	40	35
2¼	22	51	36	35
2½	28	56	43¼	40
2¾	31	56	43¼	40
3	34	61	47	46
3¼	40	61	47	46
3½	43	63	40	46
4	55	63	50	46
5	76	56	..	..
6	102	56	..	..

Cast Iron Pipe.—The market for this material continues dull, although both municipalities and industrial concerns having contracts with pipe makers are taking out their tonnage in specifications.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $30, 6 to 12 inches, $28, larger sizes, $27, gas pipe, $1 a ton higher.

Old Material.—The scrap market has been practically at a standstill during the past week and owing to a scarcity of transactions involving any material tonnage, prices remain unchanged. Some scrap dealers are very pessimistic in regard to the outlook and do not expect to see high scrap prices for some time.

We quote for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$16.75 to 17.25
Old iron rails	16.25 to 16.75
Rerolling rails (5 ft. and over)	15.00 to 15.50
Old steel rails (3 ft. and und.)	13.75 to 14.25
Frogs, switches and guards	12.25 to 12.75
Heavy melting steel	12.50 to 13.00
Shoveling steel	12.00 to 12.50

Net Tons

No. 1 R. R. wrought	$12.00 to 12.50
No. 2 R. R. wrought	11.25 to 11.75
Arch bars and transoms	16.25 to 16.75
Knuckles, couplers and springs	12.75 to 13.25
Shafting	16.50 to 17.00
Iron car axles	21.25 to 21.75
Steel car axles	18.75 to 19.25
Locomotive tires	13.50 to 14.00
Dealers' forge	10.50 to 11.00
Pipe and flues	8.75 to 9.25
No. 1 cast	13.25 to 13.75
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.75 to 8.25
No. 1 boiler cut	9.25 to 9.75
Boiler punchings	13.00 to 13.50
Cast and mixed boring	6.75 to 7.25
Machine shop turnings	7.75 to 8.25
Railroad malleable	13.00 to 13.50
Agricultural malleable	12.25 to 12.75
Angle bars, splices, etc., iron	16.50 to 17.00
Angle bars steel	11.50 to 12.00
Stove plate and light cast scrap	11.00 to 11.50

CLEVELAND

Foundries Increasing Their Melt

Office of THE IRON TRADE REVIEW,
Penton Bldg., March 11.

Iron Ore.—It was estimated recently that 4,000,000 tons of vessel capacity had not been contracted for by ore shippers, but the vessel men are not showing any disposition to tie up any of their tonnage and few will admit that they have any left. The expectation is, of course, that wild tonnage will command high rates toward the close of the season. If weather conditions permit, underwriters may allow the grain fleet to leave the head of the lakes on April 10, under insurance. The elevators at the head of the lakes are fast filling up and demand for storage capacity is active. The fleet which will leave the head of the lakes on the opening trip will be the largest on record. The engineers of the Pittsburgh Steamship Co.'s fleet have reported for duty, but the company will make no effort to open navigation before the ice clears out of the lakes.

The report that the mining properties of the New York State Steel Co. are to be taken over by a Cleveland firm is officially denied. The properties have been examined by several possible buyers, but there seem to be no prospects that the properties will change hands at any time in the near future.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi non-Bessemer, $3.40.

Pig Iron.—The market in the city of Cleveland continues lifeless, with hardly a carload being sold by Cleveland furnaces. Nominally the Cleveland prices for delivery in the city are being maintained, but some low grade iron has been shipped from the valley, and unless an active buying movement starts soon, Cleveland quotations are certain to decline. The melt, however, is being well maintained, and as a number of Cleveland foundries are expected to make additions, or have already done so, the outlook is that the melt will be increased considerably after July 1, if general business conditions continue prosperous. It is also expected that when the Upson Nut Co. completes its fifth open-hearth furnace, within three or four months, that company will find it necessary to buy a considerable tonnage of basic iron, if it runs its plant to full capacity. Reports to Cleveland agencies indicate a marked increase in inquiries in other districts, including Pittsburgh, Toledo and Buffalo, but the inquiry seems to be for the purpose of sounding the market and not many orders are reported. One Cleveland agency sold 1,000 tons of Bessemer at $17.50, valley. For the first half of this year, we quote as follows, delivered Cleveland:

No. 1 foundry	$17.75 to 18.00
No. 2 foundry	17.25 to 17.50
No. 2 southern	17.35 to 17.85
Bessemer	18.15
Lake Superior charcoal	19.10
Silveries 8 per cent siilcon	21.55
Bessemer ferro, 14 per cent	29.55

Coke.—The coke market continues dull with prices stationary.

Connellsville furnace coke, $2.50 for prompt delivery, and $2.50 to $2.75 on contract; Connellsville foundry coke, $3.50 for prompt, and $3.50 to $3.75 on contract.

Finished Material. — Some of the leading independent companies are contracting rather freely for last half delivery at 1.40c, Pittsburgh, on steel bars and 1.50c for plates and shapes. Other companies, whose order books are so filled that they cannot promise deliveries on shapes and plates any time this year, or on bars before the third quarter, continue to discourage further contracting, but are taking orders subject to the ability of the mills to deliver, to protect customers against definite jobs. The Wheeling & Lake Erie railroad has ordered 600 tons of bridge material from the American Bridge Co. and 200 from the King Bridge Co. The Lake Shore railroad is inquiring for 2,000 tons of bridge material. Bids on the new hotel at Grand Rapids, calling for 2,500 tons of shapes, have been submitted. The new addition to the Cleveland Foundry Co. will require about 1,000 tons of steel. It is expected that it will be awarded to the Forest City Steel & Iron Co. The Cleveland Railway Co. has ordered 500 tons of Bessemer rails from the Lackawanna Steel Co., which also obtained an order for 600 tons of rails from the Toledo Railways & Light Co. New buildings for the Cleveland City Hospital will require about 500 tons of steel.

Old Material.—The scrap market is weaker. Consumers are over-supplied and are asking dealers to stop shipments. Closing of large railroad lists is adding to the softened condition of the market. The Baltimore & Ohio and the Illinois Central closed lists Monday, the former at Baltimore and the latter at Chicago, and the Lake Shore closed a big tonnage Tuesday in Cleveland, while on March 19, the Norfolk & Western will dispose of a large quantity at Roanoke, Va. Prices are nominal, as follows:

Gross Tons

Old iron rails	$15.50 to 16.50
Old steel rails (under 3 ft.)	14.50 to 15.00
Old steel rails (over 6 ft.)	15.50 to 16.50
Relaying rails	27.00 to 28.00
Old steel boiler plate	11.00 to 11.25
Malleable iron (railroad)	14.50 to 15.00
Steel axles	19.50 to 20.00
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	12.50 to 13.00
Country mixed steel	11.00 to 11.50
Bundled sheet scrap	11.00 to 11.50

Net Tons

No. 1 R. R. wrought	$13.00 to 13.25
No. 1 busheling	11.50 to 12.00
No. 1 machine cast	12.50 to 13.00
No. 1 dealers' wrought	10.50 to 11.50
Machine shop turnings	5.50 to 6.00
Pipes and flues	9.00 to 9.50
Wrought drillings	6.50 to 7.00
Cast borings	7.00 to 7.50
Stove plate	9.00 to 9.50
Wrought iron arch bars	17.00 to 17.50
Wrought iron piling plate	16.00 to 16.50

La Belle Iron Works Meeting

At a meeting of stockholders of La Belle Iron Works, Steubenville, O., March 11, at Wheeling, W. Va., directors of the company were re-elected to offce. The annual report, just issued, shows net earnings for the year ending Dec. 31, 1912 at $1,249,502.58, and profits for the year are listed at $1,177,980.53. The surplus for the year, $148,335.53, provides a net surplus of $2,973,548.52. No action was taken in regard to the proposed merger of sheet and tin plate plants.

Panama Wants Cranes.—Bids will be taken, March 26, by the Panama Canal Commission, at Washington, for seven overhead traveling cranes. Three of these are of 60 ton, two of 25 tons and two of 20 tons capacity.

CINCINNATI

Pig Iron Sales Few and for Small Lots

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., March 11.

Pig Iron.—Southern No. 2 foundry iron is now obtainable at $13.25, Birmingham, from Alabama furnaces, for near-by shipment, and it is quite probable that the same price would hold in some cases for second half delivery. In Tennessee, furnace iron is quoted at $13, Birmingham basis, for the rest of the first half, while $13.25 is the general price for the third and fourth quarters. Possibly some of the furnaces would sell at $13 for the whole of the year. A few stacks in Tennessee are still holding at $13.25, Birmingham, and a few in Alabama at $13.50, Birmingham, but this is mostly because they do not desire to sell iron at the present time and under present conditions, and very few sales, if any, are reported being made at these higher figures.

In southern Ohio, furnace iron is obtainable at $16, Ironton, for the rest of the first half, and in one or two cases, for the whole of the year. This includes foundry, malleable and basic irons. There are rumors in the market that this price could be shaded on desirable business, but they cannot be confirmed.

Resale iron, which includes both southern and southern Ohio grades, is still obtainable in odd lots at prices that are governed to a large extent by the conditions of the sales. The average prices, though, are about the same as those given as the minimum quotations on furnace iron.

Transactions during the past week have been few and for small tonnages. General inquiries are also very scarce, and in some cases are being sent out more with the object of feeling the market than of buying. A central Ohio melter has recently taken 700 tons of northern iron, and a Michigan melter has bought 500 tons of southern iron for the rest of the first half. There are inquiries here for 400 tons of low phosphorus iron, and for 300 tons of malleable iron, both from eastern manufacturers. With freight rates $3.25 from Birmingham, and $1.20 from Ironton, we quote Cincinnati prices for the first and second halves as follows:

Southern foundry No. 1	$16.75 to 17.25
Southern foundry No. 2	16.25 to 16.75
Southern foundry No. 3	15.75 to 16.25
Southern foundry No. 4	15.50 to 16.00
Southern gray forge	15.25 to 15.75
Mottled	15.25 to 15.50
Southern No. 1 soft	16.75 to 17.25
Southern No. 2 soft	16.25 to 16.75
Standard southern car wheel	27.25 to 27.75
Southern Ohio No. 2	17.20 to 17.70
Southern Ohio No. 3	16.70 to 17.20
Southern Ohio No. 4	16.45 to 16.95
Silveries 8 per cent silicon	20.70 to 21.20

Coke.—There has been very little activity in the coke market within the past week, and as a result, prices have not changed to any extent. Transactions are practically all for small tonnages, and are being made more with the object of filling in until second half buying begins than anything else. Quotations have not as yet been adjusted in accordance with the general level of the market, as there is still a range of about 75 cents between spot foundry and furnace coke in the Connellsville region, and about 90 cents between these same grades in the Wise county fields. New River spot and contract cokes are the same in both cases, and this is also true of foundry coke in the Pocahontas district. We quote below prices at the ovens from the leading coke producing regions as follows:

	Prompt shipment.	Contract.
Connellsville district:		
Foundry coke	$3.25 to 3.50	$3.50 to 3.75
Furnace coke	2.50 to 3.00	2.35 to 3.00
Wise county district:		
Foundry coke	$3.25 to 3.75	$3.00 to 3.50
Furnace coke	2.35 to 3.00	2.50 to 3.00
Pocahontas district:		
Foundry coke	$3.25 to 3.75	$3.25 to 3.75
Furnace coke	2.50 to 2.75	2.75 to 3.00
New River district:		
Foundry coke	$3.25 to 4.00	$3.25 to 4.00
Furnace coke	2.90 to 3.10	2.90 to 3.10

Finished Material.—The local mill booked orders during the past week equal to its output during that period, and is now about 12 weeks behind on deliveries. Specifications are good, and generally speaking there are no requests to withhold shipments. On the other hand, premiums are being offered for nearby shipments, but these are being refused. Prices are unchanged from last week as follows: Black sheets, No. 28 gage, 2.35c, and galvanized sheets, No. 28 gage, 3.50c.

There is a good demand for materials from the warehouses owing to the fact that the mills are so far behind on deliveries that buyers, especially those who desire to build this spring upon short notice, are being forced to take their requirements from stock. Warehouses, on the other hand, are finding it a difficult matter to keep their stocks replenished. Prices are unchanged from those of last week, and are as follows, f. o. b. Cincinnati:

Steel bars, 2.10c to 2.20c, base; iron bars, 2.05c to 2.15c, base; structurals, 2.10c to 2.25c, base; plates, ¼ inch and over, 2.15c to 2.25c, base; sheets, blue annealed No. 10, 2.25c to 2.90c, base; rivets, cone head 2.60c to 2.70c, base; cold rolled shafting, 58 to 55 per cent off on round, and 55 to 50 per cent discount on flat, square and hexagon; steel hoops, 2.10c to 2.20c, base; full extras; boiler tubes as follows: 1½ inch, 46 per cent discount; 1¾ to 2¼ inch, 57 per cent discount; 2½ inch, 60 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 68 per cent discount; 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 2.15c to 2.25c; ⅝ inch square and larger, 2.25c to 2.35c; ½ inch square and larger, 2.35c to 2.45c; 5-16 inch to ⅜ inch square and larger, 2.25c to 2.65c; and ¼ inch square and larger, 2.65c to 2.75c.

Old Material.—Scrap iron prices have held at about the same level for almost two weeks, but the market is decidedly weak, and the indications are that quotations will soon be lowered again. Dealers as a general rule are not adhering to any set level of prices, but are buying and selling as the conditions of the sales warrant. There is still too much iron in the market in comparison with the demand or consumption. Sales of No. 1 busheling were made today by a local dealer at $9.25 per net ton, and some stove plate was sold at $8 a net ton, which is 25 cents below the market price. No. 1 yard wrought, machine cast, and No. 1 busheling have probably been the best sellers within the past few days. We quote below prices dealers will pay and also dealers' selling prices, f. o. b. yards, as follows:

Gross Tons

Old iron rails	$13.00 to 13.50
Old steel re-rolling	11.50 to 12.00
Old iron axles	17.50 to 18.00
Heavy melting scrap	11.00 to 11.50
Relaying rails	20.25 to 20.75
Bundled sheet scrap	8.50 to 9.00

Net Tons

Old No. 1 R. R. wrought	$10.25 to 10.75
No. 1 yard wrought	8.25 to 8.75
No. 1 machine cast	10.50 to 11.00
No. 1 busheling	8.75 to 9.25
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	6.75 to 7.25
Heavy turnings	7.00 to 7.50
Mixed cast	9.00 to 9.50
Breakage	6.75 to 7.25
Malleable	8.50 to 9.00

PHILADELPHIA

Week's Developments Are Favorable

Office of THE IRON TRADE REVIEW,
Philadelphia, March 11.

A gradually spreading buying demand in pig iron, continued activity of new business in finished products, and a reversal of the price movement in the much-depressed scrap market represent this week's contribution of favorable developments in the eastern iron and steel industry. Eastern mills continue to produce and ship on a record scale, but new bookings are sufficient to keep their unfilled tonnage unimpaired. Pig iron consumers are showing more interest in the market and the outlook for a buying movement is more promising. Reports of February of statistical conditions in pig iron in the eastern Pennsylvania and Virginia districts are favorable. Among the northern furnaces, there was some increase in stocks, but this was more than overcome by a reduction in Virginia. Booked orders in both cases showed some falling off, due to the quiet market the past month. The long delayed reaction in the scrap market has resulted in better prices in some grades, especially heavy melting steel, of which sales made at $13.50, delivered, represent 25 to 50 cents advance.

Pig Iron.—The renewed interest of buyers in the market continues to show signs of spreading, though the activity has not yet reached the stage of a genuine buying movement. The period before they reach the expiration of contracts has become exceedingly short with some consumers and they are being impelled by their needs to give the market more attention. Most of the promise of greater buying activity, however, comes from the larger consumers, who, with some portion of their first half needs uncovered, are again on the hunt for bottom figures among present soft prices, and are wavering between a decision whether to buy now or hold out a little longer. The outlook in this direction gives the market a little better tone. Low grade iron still shows the best open demand. One pipe shop in this district took about 2,000 tons of northern grades for early delivery at $16.50, delivered. Another shop of similar character purchased several thousand tons additional. The various Delaware river pipe foundries and one Virginia plant continue to negotiate directly or informally for good-sized lots, but makers will not always accept their offers. In standard mill forge, considerable inquiry has appeared. One buyer is out for 5,000 tons, another for 1,000 tons and other smaller lots are out, all for early delivery. Consumers continue to report their ability to buy standard forge under $16.75, delivered. Foundry iron still shows but a slight movement with prices irregular and more or less uncertain. Most makers ask a minimum of $18, Philadelphia and vicinity, for No. 2X, but this level is being shaded in some directions. A minimum of price of $17, delivered, for No. 3 is reported by one consumer. Virginia iron continues quotable on the basis of $15.50, furnace, for No. 2X. A buyer in southeastern territory this week took 600 tons of southern No. 2 for second quarter at $13.50, Birmingham, or $16.75, delivered. A reaction in scrap prices may drive basic iron consumers into the market more quickly, as they have been using larger percentages of heavy steel in their mixtures because of its low price. Some of the larger basic users are expected to put out inquiries for June and beyond before the end of this month. A central Pennsylvania consumer has been inquiring for 1,000 to 1,500 tons additional for forward shipment. In round tonnages, basic can be had around $17.50, delivered. A Pittsburgh steel maker has closed with a Lebanon district furnace for 1,500 to 1,800 tons of low phosphorus iron at a reported price of $21, delivered. Another Lebanon maker reports sales of 2,000 to 3,000 tons at $20, furnace. Standard low phosphorus on small lots continues $24.50, Philadelphia, but this price has recently been shaded by one maker on more sizable quantities. A further sale of 500 tons of standard Bessemer in this market is reported this week. This grade is quotable at about $19 to $19.25, delivered. The Delaware river furnace has resumed after repairs.

We quote for prompt and first quarter shipment delivered to consumers' plants, in Philadelphia and vicinity, as follows:

Eastern Pa. No. 1X foundry	$18.00 to 18.25
Eastern Pa. No. 2X foundry	17.75 to 18.00
Eastern Pa. No. 2 plain	17.50 to 18.00
Standard forge (Eastern Pa.)	16.50 to 17.00
Basic (Eastern and Central Pa.)	17.50 to 17.75
Virginia No. 2X	18.30 to 18.55
Southern No. 2	17.50 to 18.00
Malleable	19.00 to 19.25
Standard low phos. Phila.	23.50 to 24.50

Iron and Steel Bars.—A strong demand for concrete steel bars continues current in this district. Sellers are readily obtaining 1.55c, Pittsburgh, or 1.70c, Philadelphia, for re-rolled bars of this class. On soft steel bars for prompt deliveries, prices range from 1.85c to 2c, Philadelphia, and higher. Leading makers of steel bars still have little tonnage before third quarter to offer at their 1.40c, Pittsburgh, schedule. The demand by specifications is very heavy. A large concrete warehouse for the Pennsylvania railroad at Girard Point will require a considerable tonnage of bars. Bar iron shows an easier tone, some sales at 1.62c, Philadelphia, having been made. Makers, however, generally ask 1.60c, mill, or 1.65c, Philadelphia minimum. New business is quite good.

We quote for delivery to consumers' plants in Philadelphia and vicinity: Steel bars at 1.55c to 1.60c on contract and common bar iron at 1.61c to 1.67c. Prompt steel bars on mill shipments are quoted at 1.85c to 2.00c delivered, and from store are quoted at 2c to 2.15c, delivered. Cut nails are quoted from 1.90c to 1.95c, Philadelphia. Shafting is quoted at 58 and 53 off in base territory.

Plates.—Large consumers of plates have been offering eastern makers attractive tonnages for third quarter delivery, but these have been declined because the latter have not yet opened their books for that period. At present they are not quoting their schedule of 1.60c, Pittsburgh, for sheared, and 1.65c, Pittsburgh, for universals, to apply beyond the second quarter. New tonnage in plates continues very good and is keeping slightly ahead of shipments. The schedule of regular deliveries runs from four to six weeks. On very early plates, prices of 2c, mill, were obtained in several cases by one eastern Pennsylvania maker the past week. The Jones & Laughlin Steel Co. has taken 250 tons of punched plates for riveted pipe work in Panama. It is reported that the two large merchant vessels recently taken by the Cramp ship yard for Panama canal service are for the Great Northern railroad. A number of boats

continue under negotiation with eastern ship yards.

We quote delivered to consumers' plants in Philadelphia and vicinity: Sheared steel plates on contract, 1.60c to 1.75c; universal plates on contract, 1.60c to 1.80c; sheared plates for early delivery, 1.75c to 2.00c; universal plates for early delivery, 1.80c to 2.00c. Plates from store are quoted at 2.15c to 2.25c, delivered.

Structural Shapes.—The Norfolk & Western railroad has finally distributed the remainder of its recent bridge inquiry, awarding 3,500 tons to the Virginia Bridge & Iron Works and 3,400 tons to the Pennsylvania Steel Co. The American Bridge Co. had previously secured 650 tons of this order. Eastern shape makers continue to obtain a more liberal tonnage of miscellaneous orders upon which they are receiving 1.75c, mill base, for especially early delivery. Some sales of 24-inch beams upon this basis are noted. On contracts the regular price of eastern mills for eastern shipment remains 1.60c, Pittsburgh, or 1.75c, Philadelphia. Deliveries on regular turn run eight to 12 weeks. Usually the mills do not care to contract beyond the second quarter. The Lackawanna Steel Co. has taken 250 tons of sheet steel piling for the Philadelphia Rapid Transit Co.

We quote for delivery to consumers' plants in Philadelphia and vicinity: Structural shapes on contract, 1.60c to 1.75c; for early delivery, 1.80c to 2.30c; from warehouse stocks, 2.15c to 2.25c.

Semi-Finished Steel.—Leading eastern Pennsylvania sellers of merchant steel now have their books open for third quarter contracts and are booking considerable tonnage in both re-rolling and forging billets for that period. The prices ruling on this business have been $30, mill, for rolling, and $36, mill, for forging steel. Inquiries from sections outside the eastern Pennsylvania district have been quite numerous the past week. One additional sale of several thousand tons of billets was made within a few days by an eastern Pennsylvania mill for delivery into the Pittsburgh district, and other lots for that and other western markets are pending. An inquiry for 2,000 to 3,000 tons of billets was received in the east this week for delivery to Budapest, Austria-Hungary.

We quote delivered to consumers' plants in Philadelphia and vicinity: 4 x 4-inch open-hearth and Bessemer rolling billets at $30 to $31, and forging billets at from $36 to $40.

Sheets.—Eastern producers of blue annealed sheets who have steadily been obtaining premiums of several dollars a ton over the commonly quoted price of 1.75c, Pittsburgh, for No. 10 gage are now having more difficulty to get such prices for quick shipment, owing to the shorter deliveries and more aggressive competition of some independent mills in the Pittsburgh district. In some cases, readjustment of the former 1.90c, Pittsburgh, or 2.05c, Philadelphia, price has been made by eastern mills to meet this competition and the eastern market is being equalized with the 1.75c, Pittsburgh, base schedule. New business in sheets in the east continues quite active.

We quote for delivery to consumers' plants in Philadelphia and vicinity: No. 10 gage annealed sheets at from 1.90c to 2.00c.

Old Material. — After weeks of a listless market, in which prices successively declined, or being practically stationary, as during the past several weeks, scrap conditions have developed some reversal of sentiment during the past few days. An advance of 25 to 50 cents a ton has been scored in heavy melting steel, a Schuylkill Valley consumer having closed for 4,000 to 5,000 tons at $13.50, delivered. This price now seems to be the minimum. Dealers are now generally offering it and tonnage which was pressing for sale is now more firmly being held back. In sympathy with heavy steel, other grades are showing a better tone, though no buying of size has yet developed. Wrought pipe, borings and forge are slightly stronger. Turnings are weak, as the free supply in the market is large, owing to the filled-up condition of Pittsburgh buyers.

We quote gross tons, delivered to consumers' plants in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails (nominal)	$17.00 to 17.50
Old steel rails (rerolling)	15.50 to 16.00
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	15.00 to 15.50
Old iron axles (nominal)	26.00 to 27.00
Old steel axles	19.50 to 20.00
No. 1 railroad wrought	15.00 to 15.50
Wrought pipe	12.75 to 13.25
Cast borings	10.25 to 10.75
Machine shop turnings	10.25 to 10.75
Heavy cast (broken)	14.00 to 14.50
Malleable	13.00 to 13.50
Stove plate	10.50 to 11.00
No. 1 forge	12.50 to 13.00
Low phosphorus	17.25 to 17.75

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Fair Inquiry for Pig Iron

Office of THE IRON TRADE REVIEW,
St. Louis, March 11.

Pig Iron.—An inquiry appeared in the St. Louis market this morning for 1,000 tons of charcoal iron for delivery over the next three or four months, and the three inquiries for about 250 tons each of high silicon iron are still out. Sales last week were 500 tons of southern No. 3, 600 tons of southern No. 2 foundry, 400 tons of southern No. 2 foundry and 50 tons of southern No. 2 soft, all for second quarter delivery. Prices on southern iron range from $16.75 to $17.25, delivered, to which the Birmingham freight of $3.75 has been added. Northern iron is quoted at $17.50, Chicago, and $16.50, Ironton.

Our tabulated prices on southern iron delivered follow:

Southern No. 1	$17.25 to 17.75
Southern No. 2	16.75 to 17.25
Southern No. 3	16.25 to 16.50
Southern No. 4	16.00 to 16.25

Finished Material.—Steel bars are in strong demand at 1.40c, Pittsburgh, and specifications are heavy. Dealers say they have no plates to sell, although the inquiry for them is active with prices ranging from 1.45c to 1.60c, Pittsburgh, according to delivery. No new contracts are out for structural material.

Old Material.—Prices on scrap iron are unchanged today, but dealers are expecting a sharp rise in the near future, if the report that the Colorado Fuel & Iron Co. is taking large quantities of scrap out of this market to Denver turns out to be true, and the demand from Pueblo does not abate. The Southern Railway Co. will close a list Wednesday for 5,000 tons of scrap in the east today, for delivery in St. Louis, the Wabash closed one for 700 tons today, and Illinois Central closed one at Chicago for 3,000 tons.

Prices which scrap dealers are willing to pay for scrap, f. o. b. St. Louis, follow:

Gross Tons

Old car wheels	$14.50 to 15.00
Old iron rails	14.00 to 14.50
Rerol'g rails (5 ft. and over)	14.50 to 14.75
Old st'l rails (3 ft. and under)	13.50 to 14.00
Light section relayers (45 lbs. and under) subject to inspec.	23.50 to 24.50
Relay'g rails, subject to inspec.	23.50 to 24.50
Frogs, switches and guards	12.50 to 13.00
Heavy melting steel	12.50 to 13.00
Shoveling steel	10.50 to 11.00

Net Tons

No. 1 railroad wrought	$12.00 to 12.50
No. 2 railroad wrought	11.50 to 12.00
Arch bars and transoms	14.50 to 15.00
Knuckles, couplers, springs	10.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	21.50 to 22.00
Steel car axles	18.00 to 18.50
Locomotive tires	12.00 to 12.50
Pipe and flues	7.00 to 7.50
Tank iron and cut boilers	7.00 to 7.50
No. 1 cut busheling	10.00 to 10.50
No. 2 cut busheling	8.00 to 8.25
Cast and mixed borings	6.75 to 7.25
Machine shop turnings	8.00 to 8.25
R. R. malleable	11.00 to 11.50
Agricultural, malleable	9.50 to 10.00
Stove plates	8.50 to 8.75
Angle splice bars (iron)	13.00 to 13.50
Angle splice bars (steel)	12.00 to 12.25

NEW YORK

Pig Iron Buyers Sounding Market

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., March 11.

Iron Ore.—An easier ocean freight market makes it possible for some foreign ores to be offered at better advantage to eastern consumers, but as yet there has been little evidence of such a development. Some European ores have recently been quoted as low as 7¼ cents per unit, tidewater, but those have been largely trial lots of new ores for eastern furnaces. High grade foreign ores at the prices the buyers are willing to pay are still difficult to be had. Shipments continue quite active. Foreign ore receipts at the port of Philadelphia during the month of February reached 107,087 tons.

Pig Iron.—Several of the larger pig iron buyers in this territory are now sounding out the market and show greater evidence of being interested in the closing of purchases in the near future. These overtures, though not in the form of written inquiry in some cases, call for lots of 1,000 tons and more. Whether these buyers will take favorable action upon their pending negotiations, apparently depends upon their ability to attract the lowest prices of the market. Attractive opportunities of purchase are offered in the present condition of soft prices, but some consumers manifestly believe that they will be able to develop still lower levels than those which have yet appeared. The easiness of prices is spread over all districts. In eastern Pennsylvania, makers openly quote on the $17, furnace, for No. 2X, but this price has been shaded, and no doubt could be cut at least 25 cents on an attractive tonnage. A central Pennsylvania maker who was recently quoting $16, furnace, appears less aggressive for business. The leading Virginia maker continues to quote its product on the basis of $15.50, furnace, for No. 2X, but it is indicated some makers will accept less on firm offers. New inquiry, apart from the tentative figuring of larger buyers, has been light. An Albany consumer, who was inquiring for 1,000 to 1,500 tons of Nos. 1 and 2 for second quarter, is understood to have closed for this lot from a nearby furnace. Considerable new inquiry in the Buffalo district is reported by some sellers. Some uncertainty exists as to just what price can be done out of that territory, in asmuch as some of the lowest quotations recently made there have been made to meet concessions from other districts, which are less in evidence at present. It is understood that the general range of the Buffalo market for outside shipment is about $16.25 to $16.50, furnace, for No. 2X.

We quote:

Northern foundry, No. 1	$18.00 to 18.25
Northern No. 2X foundry	17.75 to 18.00
Northern No. 2 plain	17.50 to 17.75
No. 2 Virginia	18.05 to 18.30
No. 2 southern foundry	18.25 to 18.50
Malleable	18.50 to 18.75
Gray forge	16.50 to 16.75

Ferro-Alloys.—The market for ferro-manganese continues very quiet and inquiries are few and small. One buyer in this territory continues to negotiate for 150 tons. Price conditions are unchanged, $65.00, seaboard, remaining the usual quotation, though this level has been recently shaded on re-sale lots. The market in 50 per cent ferro-silicon remains strong and makers are having some difficulty to meet their heavy shipment obligations.

We quote standard English 80 per cent ferro-manganese at $64 to $65, seaboard, for early and for first half shipment and $65 for second half; 50 per cent ferro-silicon on contract at $75, Pittsburgh or Philadelphia, for carloads, $74, for larger lots, and $73, for 600 tons or more.

Plates.—Car buying is quieter, but about 15,000 in all remain under negotiation for eastern roads, the largest of which is 6,000 for the Boston & Maine. The Baltimore & Ohio has revived its inquiry for 1,000 gondolas and 500 refrigerators and is expected to close soon. The Erie has placed 500 box cars with the Western Steel Car & Foundry Co. and the American Car & Foundry Co. has 100 steel coaches for the Pennsylvania railroad, to be built at Berwick. No action has yet been taken by the Bethlehem Steel Co. upon the 10 large ore boats for Chilean traffic, upon which specifications were recently issued to the shipyards. Plate prices wtih eastern makers continue 1.60c, Pittsburgh, for sheared, and 1.65c, Pittsburgh, for universals, or 1.76c to 1.81c, New York. The volume of new business is fully up to shipments and deliveries show no change.

We quote, delivered at New York tidewater, for first quarter, 1.76c to 1.81c, New York, on sheared plates. Some makers are asking $1 higher for universal plates. On third quarter and last half contracts, Pittsburgh district, makers are quoting 1.61c to 1.66c, New York. Plates from store 2.15c.

Structural Shapes.—Railroad lettings in the eastern market have been more numerous lately, but the aggregate tonnage is not large, as the single awards are generally small. The American Bridge Co. has taken 750 tons for a bridge at Bow Junction, N. H., for the Boston & Maine; 700 tons for the Buffalo, Rochester & Pittsburgh, at Riverside Junction, N. Y.; 400 tons for the New York Central for a pier shed at Weehawken, N. J., and 770 tons on the Central of New Jersey Bridge at Catasauqua, Pa., for which four tracks have now been adopted; the Pennsylvania Steel Co. has a small tonnage for the Sunnyside, L. I., yards of the Pennsylvania railroad. The Lehigh Valley has increased its recent bridge inquiry to 1,000 tons. The Utica station, 1,100 tons, of the New York Central, is still pending. In the western market, the Chicago & Alton and the St. Paul are both negotiating for bridge work.

In mercantile lettings, the principal award of the week was the Lord & Taylor store, this city, to the Hay Foundry & Iron Works, requiring about 6,000 tons of structural shapes and 2,000 tons of cast iron columns. The original bids submitted, upon which Post & McCord were low, exceeded the appropriation and upon re-figuring, the design was altered to include cast iron instead of riveted interior columns. The Harris, Silvers, Baker Co. has 1,100 tons for the Locomobile garage, West Sixty-first street; the American Bridge Co., 800 tons for the Widener memorial library, Cambridge, Mass.; A. E. Norton Co., 350 for a loft at 670 Fifth avenue; the New England Structural Co. building, Boston; the Virginia Bridge & Iron Co., Roanoke, Va., 460 tons for the Chapman building, Spartansburg, S. C. Independent shops have taken 300 tons for power houses at Parr Shoals, S. C., and at Atlanta, Ga., 230 tons, the latter for the Georgia Carolina Power Co. The Pennsylvania railroad has a small highway bridge at Tiverton, R. I. The Thompson-Starrett Co. has the general contract for the Hudson hotel, Albany, and the steel, 2,000 tons,

is now up. The Binghamton high school, 600 tons, is pending.

Eastern shape makers report a continued activity in buying by western makers and sales are noted at 1.65c and as high as 1.75c, both at eastern mill. In some cases, these transactions have involved several thousand tons. For eastern delivery, eastern makers are quoting from 1.50c to 1.60c, or from 1.66c to 1.76c, New York, the former being only to the largest buyers. Deliveries range from six to twelve weeks.

We quote for New York delivery for first quarter as follows: Structural shapes, 1.66c to 1.76c. On third quarter and last half contracts, Pittsburgh district makers are quoting 1.61c to 1.66c New York.

Structural shapes from store, 2.15c.

Iron and Steel Bars.—Some steel bar makers, who have been practically out of the market, are now taking on regular customers in this district for their third quarter needs at 1.40c, Pittsburgh, or 1.56c, New York. This is the earliest that any of the leading makers can offer tonnage, and some have very little material even for that period. Consumers continue to file specifications against contracts for months ahead. Iron bar prices remain about 1.60c, eastern mill, although in some cases slightly lower has been done. The demand for iron bars continues good.

We quote for New York delivery, steel bars on contract from 1.56c to 1.61c, and common iron bars, 1.65c to 1.75c. Steel bars from store are quoted at 2.05c.

Rails and Track Material. — The Pennsylvania Steel Co. has taken 1,000 tons of girder rails for shipment to the Pacific coast. An inquiry for 2,000 tons of girder rails is pending for Boston delivery. There has continued a good inquiry for girders, traction rails and special track work, and makers are now pretty well booked ahead.

Cast Iron Pipe. — Prices in cast iron pipe, while still irregular, have shown some improvement in the past week, the extremely low levels having disapeared. Eastern shops are filled for 60 to 90 days, but one or two of them have shown aggressive tactics despite their comfortable position. New business is fair, but large orders are exceptional. The principal public letting now pending is 3,300 tons for Asbury Park, N. J., to close March 17. The Jamaica Water Co., Jamaica, L. I., is figuring on about 1,100 tons, largely 6 and 8-inch sizes. R. D. Wood & Co. took 400 tons of 24 to 36-inch for Boston at $23.00 and a small lot of specials at $55.00, delivered; the Donaldson Iron Works, 300 tons, for Reading, Pa., at $23.60, delivered, and the Warren Foundry & Machine Co. 325 tons of specials for Fall River, Mass. The Standard Cast Iron Pipe & Foundry Co. took 340 tons of rectangular pipe for Boston at less than $42.00, delivered, which was about $15.00 a ton less than the next nearest bidder.

We quote six-inch pipe at from $23 to $25, f. o. b. New York, in carload lots.

Old Material.—A change for the better has made its appearance in old material conditions and the market, after its long weak and listless stage, is showing up more strongly. Prices in several grades have reacted. Heavy melting steel is up 25 to 50 cents, sales having been made at $13.50, delivered eastern Pennsylvania, within the week. A transaction involving 1,000 tons at this price is noted. Railroad wrought is in better demand and is higher. Accumulations just disposed of by the railroads brought $15.75, or better. It is doubtful whether good railroad wrought could now be bought under $15.50, delivered eastern Pennsylvania, where $15, delivered, was possible a week ago. Other grades are showing the effect of the better tone of the market but no actual advances have yet been noted.

Old car wheels	$13.00 to 13.25
Old iron axles	23.00 to 23.50
Steel axles	15.75 to 16.00
Old steel shafting	15.00 to 15.50
No. 1 heavy melting steel	11.00 to 11.50
No. 1 R. R. wrought	13.50 to 14.00
Wrought pipe (not galvanized)	10.50 to 11.00
Cast borings	7.75 to 8.25
Machine shop turnings	8.25 to 8.75
Heavy cast	11.50 to 11.75
Stove plate	8.25 to 8.75
Grate bars	7.75 to 8.00

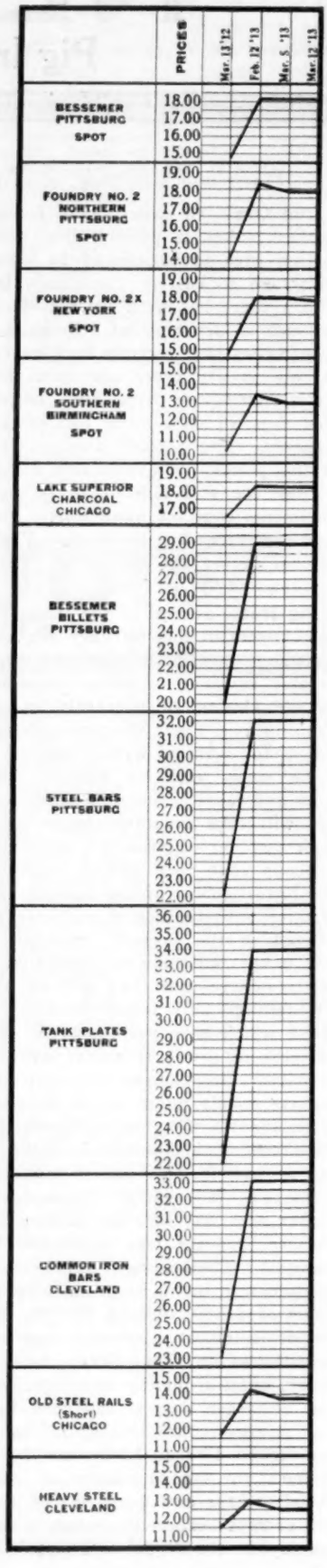
Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

Assign for Creditors

Jacob K. Dimmick, M. Rea Gano and Frederick D. Dimmick, co-partners, trading as J. K. Dimmick & Co., coke and pig iron dealers, Philadelphia, made an assignment on March 4, to W. Howard Ramsay, that city, for the benefit of creditors. A meeting of the creditors of the company will be held at 2024 Land Title building, Philadelphia, at 1:30 o'clock on the afternoon of March 24, for the purpose of selecting an additional assignee, or assignees, if the creditors deem such action necessary.

The Helen furnace of the Red River Furnace Co., Clarkenville, Tenn., will be relighted in the immediate future, after an idleness of several years. Graham Macfarlane is to be in charge of its operations.

PRICE CHART



BIRMINGHAM

Market Quiet, But Outlook Promising

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., March 11.

Pig Iron.—The feature of the past week was the confirmation of a reported sale of 18,000 tons of mixed grades to a leading cast iron pipe manufacturer. The price consideration in this transaction is not made public, and it is not known just what delivery has been agreed upon; but it is generally understood that the tonnage was engaged for an early requirement, and that figures very close to a basis of $13.50 per ton at Birmingham for No. 2 foundry were involved. As a result of this sale, the market has a decidedly stronger tone in certain quarters, although the volume of inquiry in the week was perhaps smaller than that of the week previous. With carloads and lots of 150 to 200 tons each, principally in demand, and prices paid covering a very wide range, the situation is, of course, not altogether encouraging; however, the rate of shipment from furnace yards continues at a very satisfactory rate, or about equal to the daily rate for February, and the actual foundry melt has recently increased. The demand for spot delivery is still being met largely with resale iron, and the tonnage of such iron that remains available is not definitely known. In the majority of cases, the furnace companies adhere to a basis of $14, Birmingham, for the small lots offered for prompt delivery, but such figures have been paid only where a special analysis was stipulated. Aside from the large sale mentioned, the average selling price for the week was probably no higher than $13.50 per ton. The nominal schedule for the remainder of the first half is as follows, per gross ton, f. o. b. cars at Birmingham furnaces, viz.:

No. 1 foundry	$13.50 to 14.50
No. 2 foundry	13.00 to 14.00
No. 3 foundry	13.00 to 13.50
No. 4 foundry	12.50 to 13.00
Gray forge	12.00 to 12.50
Mottled	11.50 to 12.00
Standard basic	14.00 to 14.50
Off basic	11.00 to 11.50
Charcoal	25.00 to 25.60

Cast Iron Pipe.—New business placed is small in the aggregate, but quotations have not been revised by local producers. The city of Minneapolis is in the market for some 1,200 tons of water pipe for early requirement, and an attractive tonnage from the southwest is pending. For prompt shipment, 4-inch water pipe is being held at $24.50 per ton at Birmingham, with an average of $22.50 per ton being asked for the larger sizes. Gas pipe is quotable at an advance of $1 per ton over the price asked for water pipe, and special fittings are quotable at $45 to $50 per net ton at foundry.

Old Material.—With dealers more disposed to sacrifice their profits in the several holdings, the movement of all grades has increased. Steel scrap is moving in decidedly larger volume, and within the week, some 2,500 tons additional were entered for early delivery. The sale of 600 tons of relaying rails is also reported for the week, and at prices about in line with the last revision of quotations. Dealers generally quote about as below, per gross ton, f. o. b. cars here, viz.:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	15.50 to 16.00
Old iron rails	14.00 to 14.50
No. 1 R. R. wrought	12.50 to 13.50
No. 2 R. R. wrought	10.50 to 11.50
No. 1 country wrought	10.00 to 10.50
No. 2 country wrought	9.00 to 9.50
No. 1 machinery cast	10.50 to 11.00
No. 1 steel scrap	11.00 to 11.50
Tram car wheels	11.00 to 11.50
Standard car wheels	12.50 to 13.00
Light cast and stove plates	9.00 to 9.50

BUFFALO

Pig Iron Prices Softening

Office of THE IRON TRADE REVIEW,
Buffalo, March 11.

Pig Iron.—There was a further softening of the prices on foundry grades and malleable irons due to the absence of sales and inquiry. In fact the volume of trading for the week was insufficient to afford a means of giving better than an approximate gage of the market. The operation of the furnaces of the district is not affected by this situation, as large tonnages are booked for a long time ahead and the demand on the stacks for iron under contract keeps them going to their full capacity to get out the iron being specified.

The range below, f. o. b. Buffalo, represents the local market at present:

No. 1 foundry	$16.75 to 17.25
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.50 to 16.75
No. 3 foundry	16.25 to 16.50
Gray forge	16.00 to 16.25
Malleable	17.00 to 17.25
Basic	17.50 to 18.00
*Charcoal	18.00 to 19.00
*Some grades	21.75

Finished Material.—The principal producing interest of the district is sold up over the remainder of the year and has ceased to accept further orders for delivery during 1913, except on rails and sheet steel piling. The majority of the other mills and agencies in the territory report that they are closing the first quarter with the books filled for the rest of the year, and are no longer in a position to give even fourth quarter deliveries except on certain sizes. The only orders being taken for deliveries this side of fourth quarter are by some of the smaller eastern mills. It is reported that the specifying during the month of February was in excess of the shipping capacity of the mills, causing, in general, a further extension of deliveries. There is considerable activity in railway repair material.

In fabricated material, the market shows considerable activity, as there are a large number of projects approaching the bidding period. The outlook is very favorable for a continued good business. The general contract for the valve house of Buffalo's new waterworks pumping station went to the Bison Construction Co. It will require 250 tons. Bids will be taken this week for a new school at Sloan, N. Y., requiring about 100 tons. The Lackawanna Bridge Co., Buffalo, received the general contract for the extension of the American Radiator Co.'s plant at Bayonne, N. J., which will take about 2,500 tons. This company also secured the contract for the new power house at Salmon river, requiring about 250 tons.

Old Material.—The scrap market for the week is practically devoid of demand. The only commodity moving is heavy melting steel and that in quantities only sufficient to meet the customary demands of the local users. A falling off in the prices of wrought iron and soft steel turnings and of both grades of busheling scrap is noted in the schedule following, which represents the market for gross tons, f. o. b. Buffalo:

Heavy melting steel	$14.00 to 14.50
No. 1 R. R. wrought scrap	14.00 to 14.50
No. 1 R. R. and mch. cast scrap	13.75 to 14.25
Old steel axles	17.00 to 17.50
Car wheels	15.75 to 16.25
Railroad malleable scrap	13.25 to 13.75
Wr'ght iron and soft steel turn.	7.50 to 8.00
Cast iron borings	7.50 to 8.00
Low phos. steel scrap	17.00 to 17.50
Old iron rails	15.00 to 15.50
Boiler plate, sheared	15.50 to 16.00
Stove plate (net ton)	9.75 to 10.00
Locomotive grate bars	11.00 to 11.50
No. 1 busheling scrap	11.50 to 12.00
No. 2 busheling scrap	9.50 to 10.00

WARM CONTROVERSY

Over Testimony of W. G. Pollock at Hearing at Washington.

At the adjourned hearing of the Interstate Commerce Commission, at Washington, March 10, on the complaints of the Youngstown Sheet & Tube Co., Attorney Rand, for the complainants, undertook to get information as to the relations between the Lake Shore railroad and the Union Dock Co., with respect to ore handling on the lake docks. The relationship was broken up and the affairs of the Union Dock Co. were taken over by the Pollock & Becker Co., as of May 1. All the parties to the arrangement that existed for many years fought shy of any inquiry along that line.

For probably half an hour, the witness dropped out of the hearing to give place to a heated discussion between Messrs. Rand and Butterfield over the attempt of Mr. Rand to induce Mr. Pollock to reveal statistics as to the Union Dock Co.'s earnings, divisions and dividends accruing under the old 15-cent charge.

The only illuminating fact elicited from Mr. Pollock was that the new corporation, Pollock & Becker Co., which succeeded to the business of the Union Dock Co., declared a dividend of 300 per cent on last season's work. Attorney Rand asked if that would be the only dividend on the work of the season of 1912. Mr. Pollock said he could not say and he would not undertake to guess.

Buying Movement Expected

Pittsburgh, March 12. (By wire.)—With the approach of what appears to be a buying movement, prices of some grades of pig iron are slightly softer in this district. The sale of 5,000 tons for second and third quarter basic to a local steel plant at what corresponds to $16.10, valley, indicates that this grade, temporarily at least, is weak. Although some lots of foundry have been sold within the last week at $17.50, valley, the market today does not appear to be above $17, valley, and it is understood that offers of foundry iron at $16.50, valley, have been made by anxious dealers.

Agree to Build Large Plant

The Imperial Iron & Steel Co., a concern capitalized at $5,000,000, and a subsidiary company of the United States Steel Corporation, has contracted to erect a plant at Prince Albert, Sask., by Oct. 15, which will employ at least 400 men, with a monthly pay-roll of $36,000. This is supposed to be the result of reports made by prospecting parties, who brought word from the north that rich iron deposits had been discovered. They were in the employ of Pittsburgh interests. Plants for the manufacture of iron bar are to be erected immediately, to be followed by wrought iron pipe works employing 1,000 men, and furnaces and rolling mills for steel rails and structural steel employing 2,000 men will be built. C. E. Gregory, K. C., of Prince Albert, returned from Chicago last Friday after closing a contract with the Corporation, whereby they agree to fulfill the above conditions.

HEAVY SPECIFYING

Exceeds Shipments — Shortage of Crude Steel.

New York, March 12. (By wire.)—Specifications against finished steel products of the largest mills, in spite of extended deliveries, are far exceeding shipments. Some of the largest plants in the country cannot take new business before the fourth quarter. At the same time, large tonnages continue to be pressed upon them by anxious consumers.

Shortage of steel, despite enormous production, still accompanies great demand upon mill capacities. Large steel works continue to seek both open-hearth and Bessemer billets in all directions. Carnegie has just purchased 12,000 tons, some of which will come from the south. Blast furnaces also are showing the strain of hard driving. One Shoenberger in the Pittsburg district has been just forced out for repairs.

Locomotive Orders

The Chicago & Western Indiana railroad has placed an order for five superheater eight-wheel switching locomotives with the American Locomotive Co. The Chicago, Terre Haute & Southeastern has ordered five superheater consolidation freight locomotives and the Citizens Gas Co., Indianapolis, Ind., one six-wheel saddle tank switching locomotive from the same builder.

New Cleveland Firm.—R. W. Maltbie and J. J. Meyers have formed the firm of Maltbie & Meyers, with office at 519 Swetland building, Cleveland, and will engage in the business of erecting structural steel.

NOT A TIE ROLLED

Supply of Cotton Ties Is Unusually Scarce.

New York, March 12. (By wire.)—Serious doubt which has overhung cotton planters as to where they will obtain cotton ties for the season's crop has not been modified in the least. If anything, the outlook is even more uncertain, as up to this time not a tie has been rolled. Usually mills have the demand well in hand by this time through winter rolling. It is reliably estimated that 2,400,000 ties will be needed for coming crop.

Demand for hoops continues enormous and makers are very reluctant to turn their mills from this product for which good prices are obtainable to comparatively low-priced ties, especially with the threat ties may be placed on free list.

Death of John M. Clark

John Mitchell Clark, senior partner of the firm of Naylor & Co., 45 Wall street, New York, died March 10, on board the North German Lloyd steamer Grosser Kurfurst, which is now cruising in the Caribbean Sea. Mr. Clark was 66 years of age. He was president of the American Grondal Kjellin Co., and the Berkshire Iron Works, operating the Sheridan blast furnace, Sheridan, Pa. Mr. Clark was a native of Boston, and was educated at Brown University. After completing his college course, he entered the employ of Naylor & Co. and by gradual advancement became the head of the New York office.

METAL MARKETS

Chicago

March 11.

New Metals.—Although prices have changed but little the market for new metals is steadier. Casting copper is quoted at 14.75c as compared with 14.50c of a week ago.

We quote dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 14⅞c; casting, 14¾c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.15c; lead, desilverized, 4.35c; sheet zinc, 8.25c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 47.57c; Cookson's antimony, 9⅜c; other grades, 8⅜c.

Old Metals.—The market for old metals is decidedly irregular although there are indications of slightly better prices on some items.

Machining Gas Tractor Parts by Novel Methods

How a Shop Was Rearranged to Facilitate Production and the Equipment Installed Whereby the Output Was Increased

For a number of years following its organization, the Minneapolis Steel & Machinery Co., Minneapolis, specialized in the construction of Corliss and heavy gas engines and its shop was built primarily to take care of this class of work. Within the past 18 months, the management of the company decided that the farm tractor field offers unusual opportunities for a plant located in the heart of the northwestern agricultural belt, and arrangements accordingly were made to manufacture a line of gas tractors of the type now rapidly becoming familiar to the farming communities of the country.

This necessitated extensive changes in the shop organization and methods, and in many cases considerable study was necessary to adapt the equipment to the new requirements. But at the present time, the plant, although small, has an output practically equal to that of the largest tractor factories in the country, namely from 25 to 27 machines per week. This result has been achieved largely by paying unusual attention to jig and tool design to reduce the machining operations to their simplest elements, and also by making a special study of the assembling problem. The latter has resulted in the design of several special types of portable, steel assembling benches, which have introduced great economies. Some of the details of this special jig, tool and bench equipment will be discussed in this article.

The Plant

The plant consists of a machine shop, 125 x 200 feet; foundry, 125 x 325 feet; pattern and plate shop, 60 x 205 feet, three stories, and a structural shop, 175 x 260 feet. The machine shop and foundry parallel each other with an alley, 50 feet wide, between them, and the erecting shop, which is 60 x 175 feet, is built at right angles across one end.

The main aisle in the machine shop is illustrated in Fig. 3, and, as indicated, a number of small jib cranes equipped with air hoists are installed to serve the heavy machine tools. Also the entire bay is spanned by a heavy traveling crane equipped with both main and auxiliary hoists. One end of the shop is entered by a standard gage loading track.

Portable air tools are employed quite extensively and it was found that the damage to the air hose caused by workmen carelessly stepping on it was considerable. This loss was checked by a very simple expedient. A number of cast iron thresholds were made, which are now used to protect the hose whenever it is laid across a gangway.

Farm tractors are driven by heavy, four-cylinder gasoline engines and in machining the various parts of these motors the principal operations to be performed include drilling and planing the crank cases, boring and facing the cylinders, grinding the crank shafts and cutting the gears.

For drilling the crank cases a number of Pawling & Harnischfeger horizontal spindle post drills, Fig. 1, are employed. They are driven by individual electric motors and are arranged in a row alongside a 3-foot, 6-inch track. The pieces to be drilled are mounted on trunnions in a special jig which is carried by a car running on this track. The general design of the car is clearly indicated. The wheels on one side are plain, while those on the opposite rail are provided with a double flange to prevent the vehicle from leaving the track. The latter also are provided with slotted collars in which

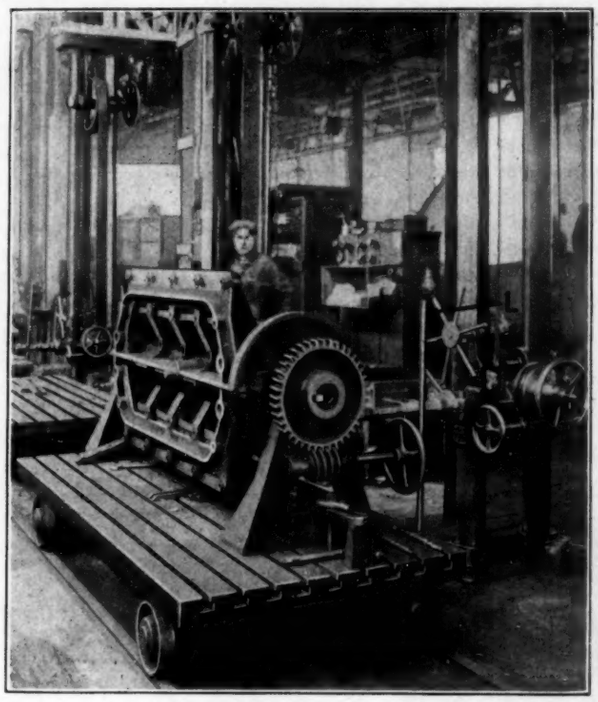


FIG. 1—POST DRILLS, JIG AND CARS FOR DRILLING CRANK CASES

FIG. 2—CYLINDER BORING AND FACING JIG ON BORING MILL

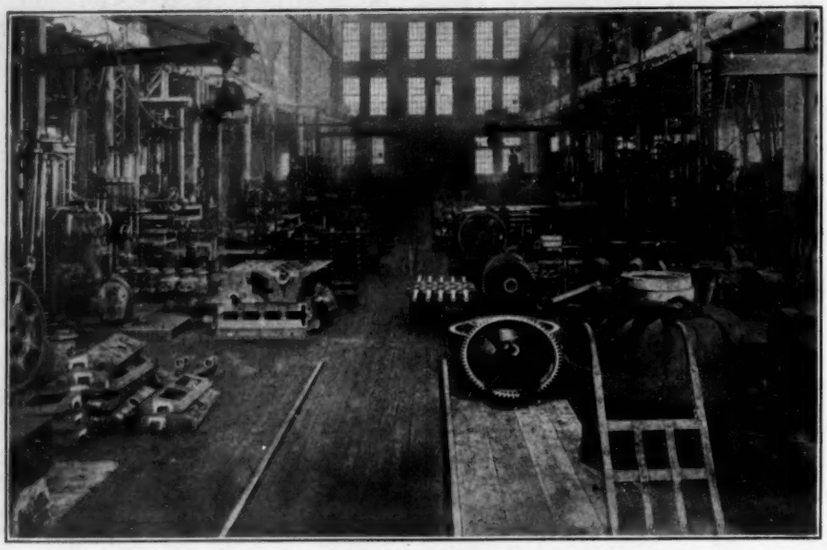


FIG. 3—MAIN AISLE OF THE MACHINE SHOP

a bar or lever may be inserted to rotate the wheels and thus move the car along the track. This lever is shown at *L*, Fig. 1. The platform of the car is cast iron, 2¼ inches thick, planed on top and provided with T-slots to facilitate setting the work.

The jig itself is in the form of a cradle which fits over the entire crank case. It is made in halves and is held together by two bolts at opposite corners. The work is set into the jig by a crane and once in position the whole may be rotated at the will of the operator by means of worm gearing and a hand wheel, bringing the holes on all sides of the work successively in front of the drill. There are 100 holes to be drilled in each crank case and by the use of this fixture one man handles the job at the rate of six pieces per day. Before the rotary jig was adopted, it was necessary to change the setting of the work nine times in drilling a single case.

Handling Work Progressively

As suggested by Fig. 1, the group of drill presses with the track in front of them may be utilized for handling work progressively. In such a case each machine is fitted with a drill of different size and the castings, mounted in jigs on cars, are brought under the various drills successively, each one taking care of all the holes of one size. This saves the time necessary to change drills and keeps the machines working practically without interruption. When particularly accurate results are desired, the machines may be fitted up in pairs, one tool carrying the drill and the other a reamer of corresponding size. The holes are first drilled and then the car is shoved along to the next machine, where they are carefully reamed. In the meantime another truck, carrying a new casting, is brought up for drilling.

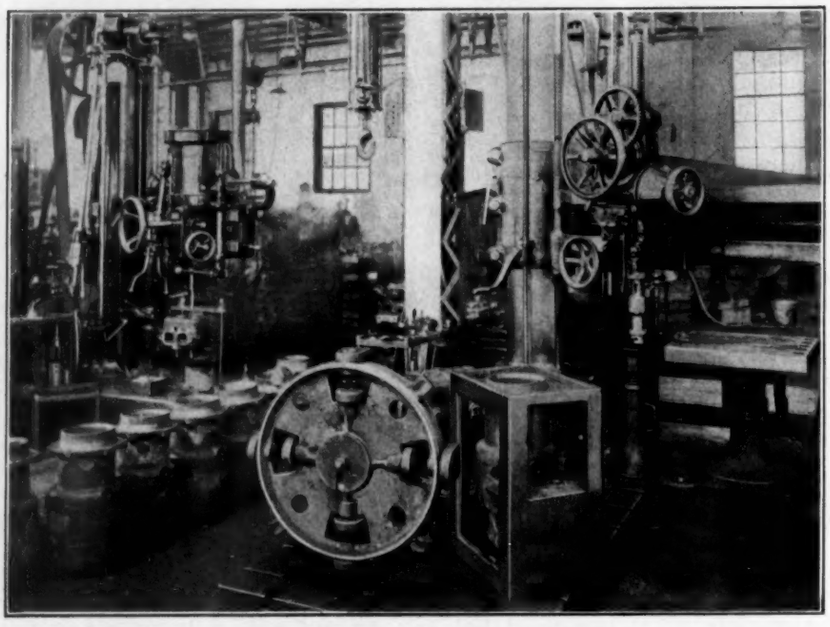


FIG. 4—CYLINDER DRILLING JIG AND DIFFERENTIAL SPIDER JIG

Boring and Facing Cylinders

Fig. 2 illustrates a fixture used for boring and facing cylinders on a Colburn, double-head boring mill. The jig consists of a chair casting which is bolted securely to the table of the machine and a hinged strap or throat piece that fits around the barrel of the cylinder and clamps it in place. The throat piece is provided with two set screws which are adjusted so that the work is properly centered. The cylinder is bored and faced at one setting and the illustration shows an external tool facing the lower end of the barrel. The jib crane and air hoist, also shown in the illustration, are used to handle the pieces to and from the machine. The rough castings are piled at the left, and the finished cylinders at the right of the boring mill.

After the cylinder is bored and faced it must be drilled and tapped at numerous points. For this purpose the drilling jig, *J*, Fig. 4, is employed. It consists of a box frame that completely surrounds the cylinder so that it may be drilled on all six sides at one setting. A jig for drilling the principal holes in a differential gear spider is shown at the left of the cylinder jig. This fixture is mounted on a horizontal axis so that it may be rotated and all four holes drilled at one setting.

Grinding Connecting Rod Bearings

The operation illustrated in Fig. 5 is interesting in that it shows the apparatus employed for grinding the connecting rod bearings on crank shafts of unusual size. Many gas engine builders now grind their crank shafts to the proper dimensions, but few have attempted to use this method on shafts whose bearings exceed 2 inches in diameter and 3¼ inches in length. Those on the shaft, illustrated in Fig. 4, however, are 3½ inches in diameter and 4⅝ inches long. The face of the wheel is 4⅝ inches wide so that the entire surface of the bearing is ground at one operation without lateral movement of the tool or work. The wheel, which is 30 inches in diameter, operates at 6,000 revolutions per minute and is driven by an individual, 24-horsepower motor. The cutting edge is lubricated with soda water. A heavy cast steel guard extends almost completely around the wheel. The machine, which has a swing of 22¾ inches and a gap of

96 inches, was furnished by the Norton Co. The crank shafts are fitted to special centers, as indicated in Fig. 5, and are run through the machine in lots of six. Each shaft goes on the machine twice, first to take a roughing cut and again to be finished.

Assembling

In many shops there is considerable inefficiency in the assembling department, due to the fact that the benches and tool equipment will not permit the operations to be executed in their proper sequence. This problem has been given particular attention in the plant of the Minneapolis Steel & Machinery Co., and some specially designed steel assembling benches have been constructed to overcome the difficulties involved in the use of wooden benches. The steel benches are of two types, stationary and portable, and their chief advantage lies in the fact that they are shaped exactly to the conditions of the work at hand. Also, they may be cheaply and quickly built in any light plate or structural shop.

A group of stationary steel benches in the motor assembling department is shown in Fig. 6. Their construction is clearly indicated in this illustration; they consist of channels and angles riveted together so as to form a stiff chair or cradle in which the machine to be assembled may be placed. They are arranged in a row with an I-beam trolley overhead to handle the work. The assembling tasks are so subdivided that each man performs only a certain group or related series of operations and then passes the machine on to the next bench. No two benches are exactly alike, each one being designed to take the work in the most advantageous position. Thus the first operations on the crank case are performed with the machine lying bottom up; later it is turned on one side, as shown at the right in Fig. 6.

Portable Benches

For the final touches in the motor assembling department, the engines are transferred to the portable benches, illustrated in Fig. 7. These are similar in their design to the stationary benches, except that they rest on small wheels and are provided with handles so that they may be easily moved about on the floor. The portable benches permit the utmost flexibility in the arrangement of the work and also serve as trucks, thus diminishing the demand on the cranes.

In connection with the various assembling operations, the portable steel vises, illustrated in Fig. 6, have been found particularly useful. They may be quickly moved about in accordance with the demands of the work and are, therefore, always in a convenient position. They consist of a heavy triangular cast iron base, mounted on three wheels, carrying a cast iron column at the top of which the vise itself is bolted. The wheels may be locked by means of set screws. These vises were made in the company's own shops at a cost of about $11 each.

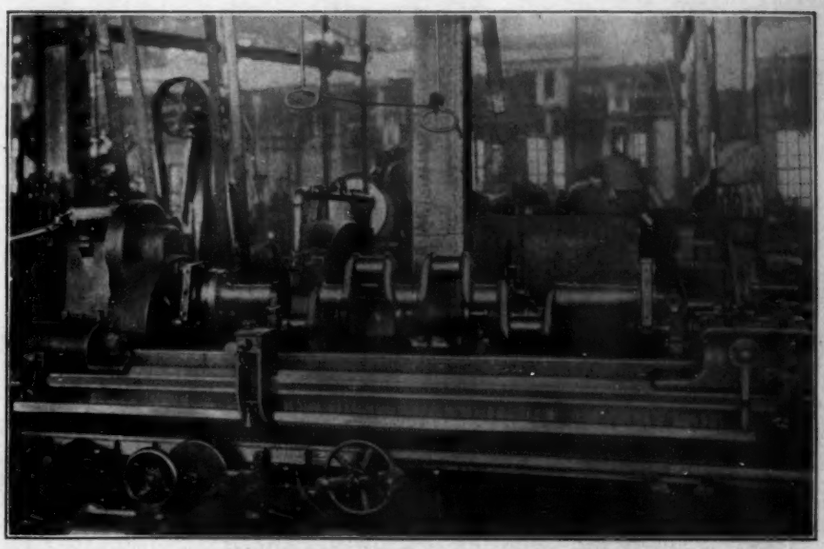


FIG. 5—GRINDING A LARGE CRANKSHAFT

Figs. 8 and 9 illustrate some features of the work in the erecting department. In building a tractor, it is necessary to assemble the transmission, bolt it to the frame, bolt on the fuel tank and connect up the front wheels with the machine bottom side up. After this has been done, the vehicle must be righted and in order to perform this operation in a minimum space, the chain tackle, illustrated in Fig. 9, is employed. The chain yoke is connected to the main hoist of the erecting floor crane. The entire tractor is swung in the air and set down again, right side up, in the same space it occupied before.

In the erecting shop the men work in pairs, each pair having certain definite assembling operations to perform. By subdividing the work in this manner, a force of 20 men is able to erect eight complete tractors from six stalls in a week. When the machines are finally completed, they are picked up bodily from their stalls on the erecting floor by the traveling crane and are loaded directly onto flat cars.

In 1910, the United States mined about 500,000,000 tons of coal; in 1911, about 495,000,000 tons; and in 1912, the production aggregated 550,000,000 tons. It is predicted that the 1913 output will be 600,000,000 tons.

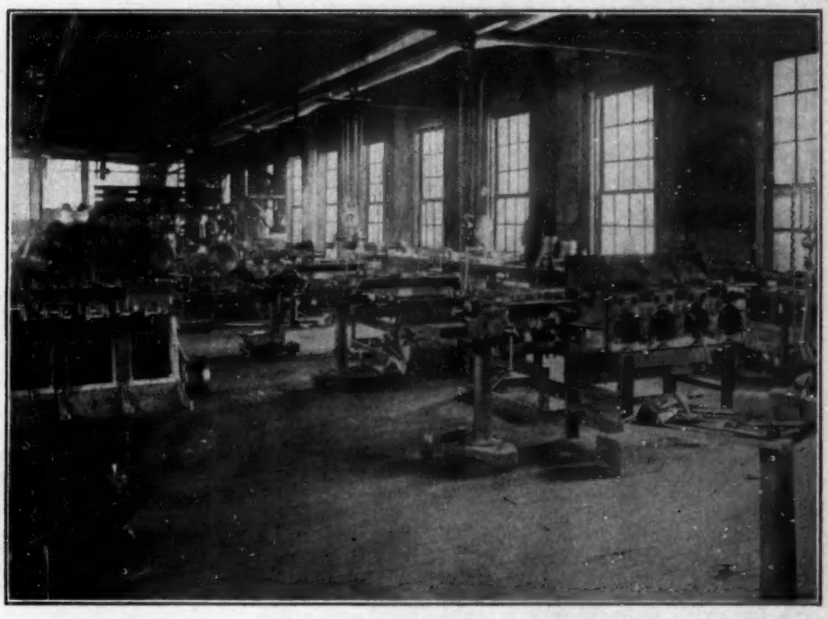


FIG. 6—STEEL ASSEMBLING BENCHES AND PORTABLE VISES

FIG. 7—PORTABLE STEEL ASSEMBLING BENCHES

Chrome-Vanadium Car Wheels

A report received from the Vandalia railroad by the American Vanadium Co., Pittsburgh, of the results of comparative service tests, extending over a period of several years, of chrome-vanadium and carbon steel tender wheels, shows that the chrome-vanadium wheels averaged 2½ times as much mileage per unit diameter of wear and turning as those of carbon steel under the same class of tenders operating in similar service. The tenders to which the wheels were applied were of 7,500 gallons water capacity and 12 tons coal capacity with an average load per wheel of 17,875 pounds. Up to June, 1913, the wheels were in service 3½ years and the chrome-vanadium wheels averaged 152 per cent more mileage per 1/16 inch diameter of wear and turning than the carbon steel wheels. For each 1/16 inch of wear and turning the chrome-vanadium tender wheels gave an average mileage of 6,137 and the carbon steel tender wheels, 2,427. Shelled or burned spots, found to occur in the carbon steel wheels, did not develop in the treads of the chrome-vanadium wheels. As a direct result of this, there was less flange wear and less material wasted in turning with a consequently greater mileage per unit diameter of wear plus turning. Up to December, 1912, these chrome-vanadium wheels made the remarkable record of 316,012 miles, and it is probable that the wheels will show a life of 400,000 miles.

As a result of the rapid increase, in the past decade, in the weight of locomotives, tenders and cars and the higher speeds of modern freight and passenger trains, the stresses on tires and wheels have grown enormously. The steel wheel first was introduced to meet special requirements which had exceeded the capacity of the chilled cast iron wheel. Steel gradually replaced cast iron for passenger cars and tender wheels and today the solid steel or steel-tired wheel is the adopted standard for those classes of service. As a result of exhaustive investigation it is the prevailing opinion of experts that the capacity of a wheel or tire to resist wear and shelling is governed by the elastic limit of the metal of which it is constructed. When shelling or kindred troubles occur, these can be greatly reduced or practically eliminated by the use of steel of a sufficiently high elastic limit and with other physical properties in proportionate ratio. Higher physical properties can be obtained either by the heat treatment of the present carbon steel tire and wheel or by the use of a heat-treated alloy steel. Chrome-vanadium tender wheels are now in service on a number of roads, while orders recently have been placed by several large trunk lines.

FIG. 8—CRANE LOADING A COMPLETED TRACTOR

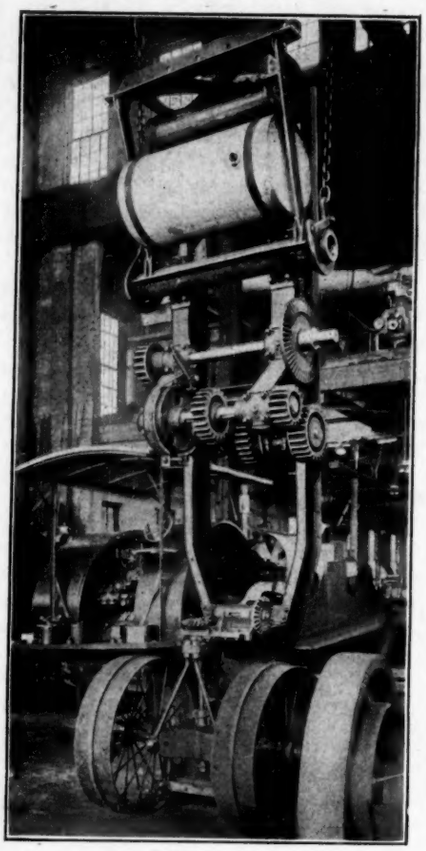


FIG. 9—TURNING-OVER TRACTOR DURING ERECTION

Commercial Practice of Fuel Gas Production

An Interesting Exposition of the Theory and Practice of Producers as Employed in Making Furnace Gas

For the purpose of investigating the coals of Canada with reference to their economic qualities, the Canadian department of mines established an experimental producer plant at McGill university, Montreal. In reporting the results of these tests, R. J. Durley has given the following review of commercial gas producer practice, together with an account of the utility of different types of producers for different classes of fuels.

Gas producers differ in design according to the fuel with which they are to be operated and the purpose for which the gas is to be employed. Gas for power purposes, to be used successfully in an internal combustion engine, must be cleaner and more uniform in composition than is necessary in the case of gas to be used only for fuel or metallurgical work. The preparation of coal gas by distilling highly bituminous coal in air-tight retorts is, of course, the usual process for making gas for city supply, and this gas, when properly cleaned, can be used for power purposes. Such gas must be clearly distinguished from that known as producer gas, and is usually too expensive for use either in gas engines, for power purposes or for metallurgical work. On the other hand, certain kinds of producer gas are largely used for city supply when specially treated to render them suitable for this purpose.

Definition of Producer

The term producer gas is used to denote the mixture of gases obtained by passing air, or a mixture of steam and air, through a body of incandescent solid carbonaceous fuel; coal, coke, peat, or wood are all successfully used. A blast furnace producing pig iron is, in fact, an example of such a producer on a large scale, and blast furnace gases can be used either for firing boilers or (after proper cleaning) for supplying gas engines for power purposes. In a blast furnace air alone is passed through the heated coke, which forms so large a part of the charge of the furnace.

The simplest kind of gas producer is one using a fuel, such as coke, containing little or no volatile combustible matter and supplied only with air. The arrangement of a simple up-draft producer is shown in Fig. 1, and it will be seen to contain a somewhat deep bed of fuel, *F*, surrounded by a gas tight envelope of plate iron, with proper provision for the supply of air at *A*, the introduction of fuel at *B*, and the removal of the resulting gases at *G*.

The general nature of the actions occurring in such a producer can be readily followed by any one having a slight knowledge of chemistry. With a sufficiently deep bed of fuel and a properly adjusted air supply, it will be found that the carbon of the fuel unites with the oxygen of the air to form carbon monoxide (CO), a combustible but poisonous gas, which, if supplied with a further amount of air at a proper temperature, will unite with more oxygen and form carbon

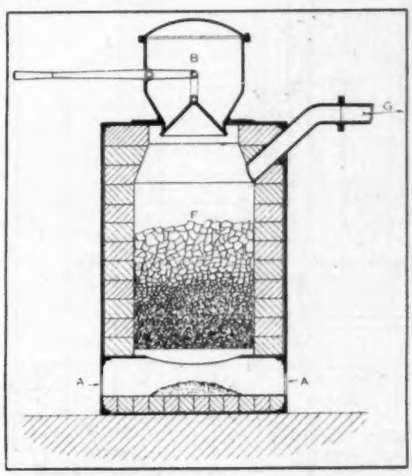


FIG. 1—A SIMPLE GAS PRODUCER

dioxide (CO_2), the product of complete combustion of carbon and oxygen. The formation of carbon monoxide in the gas producer thus involves partial combustion of the carbon, and is accompanied by the evolution of only about 30 per cent of the heat which could be produced by burning the same weight of carbon completely to carbon dioxide. This 30 per cent is lost, being dissipated by radiation and carried off as sensible heat in the hot producer gas; the balance, about 70 per cent, can be utilized by burning the producer gas with more air. The efficiency of a producer, such as that just described, can, therefore, not exceed about 70 per cent, since a producer of 100 per cent efficiency is one giving gas which, if burnt, would develop 100 per cent of the calorific value of the fuel employed. The *efficiency of a producer is*, in fact, the

ratio $\frac{\text{Calorific value of gas produced}}{\text{Calorific value of fuel consumed}}$

It has been found experimentally that the heat produced by burning one pound of carbon to carbon monoxide (CO) amounts to about 4,200 B. T. U., while if the resulting 2 1/3 pounds of carbon monoxide are permitted to unite with a further supply of oxygen so as to produce 3 2/3 pounds of carbon dioxide, an additional 10,450 B. T. U. is generated. The calorific value of one pound of carbon is, therefore, 14,650 B. T. U. when it is completely burnt to carbon dioxide. Hence, as has just been explained, the heat efficiency of the process of formation of carbon monoxide will be $\frac{10,450}{14,650}$ or 71.3 per cent under ideal or theoretically perfect conditions. In an actual producer of the kind described above even this figure cannot be reached, and it is necessary to adopt some means for utilizing a portion of the heat which otherwise would be wasted. This can be done most simply by mixing a proper amount of steam with the air supply.

Action of Steam

If steam be passed over incandescent carbon, a chemical reaction occurs which splits up the steam into its constitutents, hydrogen and oxygen, and the oxygen, under suitable conditions of temperature, unites with the carbon, usually forming both carbon monoxide and carbon dioxide. The gas resulting from this process will, therefore, under ideal conditions, be a mixture of hydrogen, carbon monoxide, and carbon dioxide, the latter in small amount if conditions are favorable. The dissociation of the elements of the steam, however, requires more heat than can be furnished by the combustion of carbon with the resulting oxygen; hence, on the whole, the formation of water gas, by passing steam over red hot carbon, is characterized by the lowering of the producer temperature because of the heat absorbed, and, if heat is not supplied from an ex-

ternal source or from some other chemical reaction, the temperature will soon fall so low that the decomposition of the steam ceases. This necessary supply of heat could evidently be furnished by carrying on the formation of air gas in proper quantity, and in many actual gas producers the two processes are in fact carried on simultaneously, the supply of steam being so proportional to that of oxygen that the heat resulting from the formation of air gas by burning a portion of the carbon to carbon monoxide by means of the oxygen of the air, is used up in maintaining the water gas reaction by decomposing the steam. The resulting gas, is, therefore, composed of hydrogen, carbon monoxide, and a proportion of carbon-dioxide, the whole diluted by nitrogen and other inert gases derived from the air supply.

Formation of Air Gas

It should be stated that in the formation of air gas a proportion of carbon dioxide is always formed, in addition to the carbon monoxide, its amount depending upon various circumstances, one of which is the temperature of the producer. Further, should the fuel used be one like anthracite or coke, which contains any compounds of hydrogen and carbon, the resulting gas will probably contain a proportion of volatile or gaseous hydro-carbon compounds. Table I gives an analyses showing (a) the composition of a sample of gas furnished by a producer using anthracite coal and supplied with both air and steam, which may be taken as typical of ordinary producer gas as used for gas engine work; (b) the composition of typical air gas in which the supply was air containing only a very small proportion of water vapor and the fuel was coke; (c) the composition of water gas made by blowing steam over red hot coke.

Anthracite and coke, the fuels used in generating the gases whose compositions are given in Table I, contain a very large proportion of fixed carbon, typical analyses of these fuels being given in Table II.

It is evident thus that if anthracite or coke of good quality is used in a gas producer, the resulting gas should contain only a very small proportion of hydrocarbon compounds, and this is, in fact, found to be the case.

When gas is to be generated from fuels such as bituminous coal, which contain a considerable amount of hydrocarbon compounds and give off a large quantity of volatile matter on heating, the problem is a much more difficult one, especially if the gas is to be used for power purposes. This is because the working of the producer itself is more complicated than if non-bituminous fuels are used, and the tarry matters and products of distillation, arising when the coal becomes heated, must be dealt with in such a way as to avoid stoppage in the producer itself, in the pipes and in the passages and valves of the engines. This aspect of the question is considered later, but it may be said here that by adopting special designs of producer and gas cleaning apparatus coals containing as much as 40 per cent of volatile matter have been successfully employed for power gas generation.

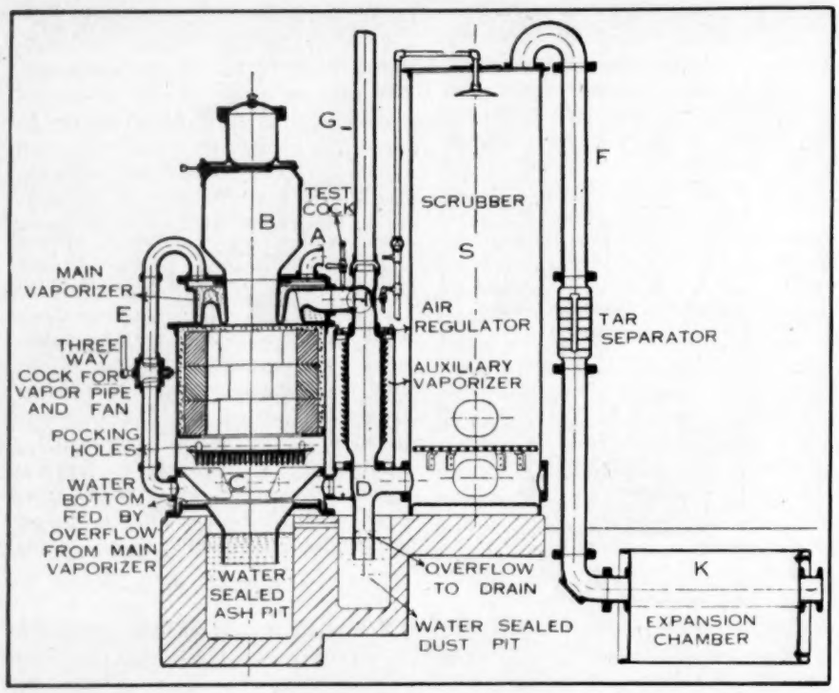


FIG. 2—CROSS-SECTION OF A SUCTION PRODUCER

Gas Producers for Non-Bituminous Fuels

A sectional view of a gas producer for use with fuel containing little or no volatile matter is given in Fig. 2, from which it will be seen that the arrangement of Fig 1 is here modified so as to provide for the necessary supply of steam, and the apparatus is intended to be worked as a suction producer in which the engine itself draws into the producer the quantity of air needed for its operation. Slight constructive changes would be needed if the producer were of the pressure type, in which the air is blown in by a fan, or if the draft were maintained by the suction of an exhauster. The steam needed could, of course, be supplied by a separate boiler, but as this would involve additional expense and would require more or less continuous attention, it is usually desirable, especially in small installations, to arrange the producer so as to generate its own steam. The particular design shown in Fig. 2, is that of Ruston, Proctor & Co., Ltd., Lincoln, Eng., but producers of this type are built by many well known firms in Europe and America.

In Fig. 2 the upper part of the producer proper consists of a cast iron vaporizer or boiler, which is heated by the fuel below, and is so proportioned as to evaporate as nearly as possible the amount of water required to give steam to the air supply. Fuel is introduced through the hopper, *B*. The air enters at *A*, passes over the heated water, and carries the required amount of steam along the pipe *E*, leading to the

Table I.

COMPOSITION OF GASES BY VOLUME.

	(a) Producer gas, per cent.	(b) Air gas, per cent.	(c) Water gas, per cent.
Carbon monoxide..	27.6	32.6	44.0
Carbon dioxide....	3.9	1.4	3.3
Hydrogen	15.3	1.0	48.6
Methane	1.4	....	0.4
Nitrogen, etc.....	51.8	65.0	3.7
Total combustible gases	44.3	33.6	93.0
Fuel	Anthracite	Coke	Coke

space, *C*, below the grate. The gas leaving the upper part of the producer passes through a water seal, *D*, and enters the bottom of a wet scrubber, *S*, consisting of a cylindrical vessel containing a body of loosely packed coke through which water trickles, thus cooling and washing the gas on its upward passage. From the wet or coke scrubber the pipe, *F*, conducts the gas into an expansion box, *K*, and then to the engine. For starting the producer, a small hand fan (not shown) and a waste pipe, *G*, leading to the atmosphere, are provided, so that, when starting, air is blown into the space, *C*, the cock, *H*, is opened to the atmosphere, and the producer works under slight pressure, whereas in regular running the pressure in the whole system is slightly less than atmospheric. Suction producers of this type are in use up to about 500 horsepower; larger producers are usually of the pressure type, in which air is supplied by a blower or steam jet, and the whole apparatus is under a plenum.

Table II.

COMPOSITION OF ANTHRACITE AND COKE.

Fuel.	Fixed carbon, per cent.	Volatile matter, per cent.	Ash, per cent.
Pennsylvania anthracite	85.0	8.5	6.5
Pennsylvania coke	89.0	1.3	9.7

It should be noted that in suction gas producers the vaporizer or boiler is frequently placed in the pipe leading to the scrubber, and not in the producer itself. An apparatus of this kind is shown in Fig. 3, which represents the Pintsch suction producer. Here the hot gas from the fuel bed, leaving the producer by the pipe, *B*, passes through a vertical tube, *C*, in what is really a small boiler, fed by a gravity water supply, and discharging steam at atmospheric pressure by the pipe, *J*, into the space below the grate of the producer. Automatic adjustment of the steam supply is arranged, so as to suit the requirements of the fuel and load. The producer is provided with a dust trap, *D*, and the usual wet scrubber, *E*, and its accessories.

Formation of Clinker

For the operation of an anthracite or coke producer, provision must, of course, be made for poking the fire, for the removal of ash and supply of fresh fuel, and for getting rid of any dust or refuse which may be deposited in the pipes or scrubbers. The chief troubles to be guarded against arise from the formation of clinker in the producer, or from gas explosions in the producer or pipes; also there is the possibility of gas poisoning if any leak or opening permits the escape of gas containing carbon monoxide into the producer or engine room.

The term clinker in a gas producer is used to denote the fused ash of the fuel. If the temperature in the incandescent zone of the fuel bed is such that the ash melts as it is formed, there is a tendency for the melted ash or clinker to adhere to the wall of the producer and seriously interferes with the regular solidifying in a cooler part of the fuel bed or in the bed of refuse lying above the grate. Sometimes a ring of clinker grows out from the wall of the producer and seriously interferes with the regular downward movement of the fresh fuel which ought to occur as that below is burnt away. In such a case it is necessary to remove the adherent mass by poking. The trouble may evidently be avoided either by using a fuel whose ash has a high melting point, or by working with a low temperature in the fuel bed. The latter result is easily obtained by increasing the proportion of steam in the air supply, but too low a temperature is undesirable, since it is found that with very low producer temperatures the resulting gas will be high in carbon dioxide and low in carbon monoxide; the calorific value of the gas generated will thus be lessened. The usual temperature in the heated zone of a gas producer is about 1,500 degrees to 2,100 degrees Fahr.

The risk of gas explosion in a properly operated gas producer plant is very slight. In order to produce an explosive mixture, the gas after leaving the fuel bed must be mixed with air, and this can only occur through leaky joints, valves, or cocks in a suction plant, or by the improper use of openings, such as ash pit, cleaning, or poke hole doors. The pipe system should always be provided with a sufficient number of water seals, like that shown at the bottom of the gas outlet pipe in Fig. 2, so that the effect of a gas explosion in the piping will simply be to blow out the water in one or more of the seals. When clean-

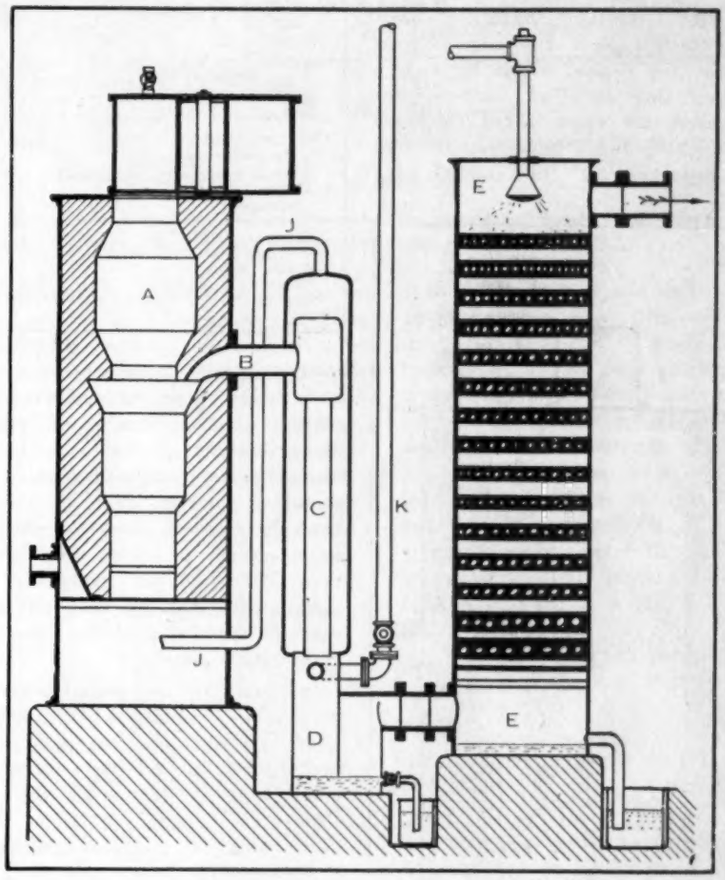


FIG. 3—CROSS-SECTION OF A PINTSCH PRODUCER

ing out a scrubber or gas holder, no fire or light should be allowed in the producer house and all precautions should be taken to avoid possibility of explosion.

Carbon monoxide is the only poisonous constituent of producer gas, but it is inodorous and occurs in sufficient amount to render the gas dangerous to human life if inhaled. Every care should, therefore, be taken to guard against leakage, and the producer house must be well-ventilated. When cleaning is to be done it is very imprudent to enter a scrubber, gas holder, or any part of the installation until it is completely cleared of gas, and has been blown out with fresh air. Again, in starting a suction plant care must be taken that the engine is not in such a position that both gas and air inlet valves are open, as in this case gas might possibly be driven through the producer by the starting fan

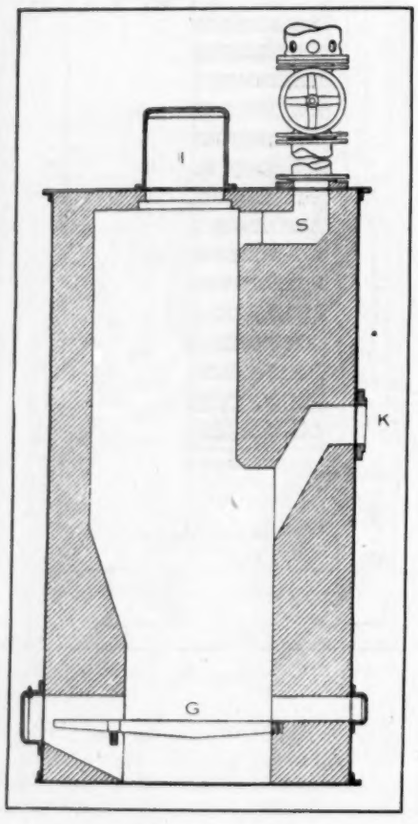


FIG. 4 — PRODUCER FOR LIGNITE BRIQUETTES

and thence into the engine room. Unburnt gas should not be allowed to escape from test cocks or other orifices into the producer or engine room.

On account of the fact that with a suction producer the pressure within the gas system is less than that of the atmosphere, any leakage occurring when the engine is working will be from the air into the producer or piping. With a pressure plant, however, the leakage is outwards, and for this reason such plants require more care to guard against possible leaks.

The efficiency reached by the best gas producers in practice is high.

Table III.

COMPOSITION OF TYPICAL GASES FROM BITUMINOUS COAL.

Type of producer.	R. D. Wood. Per cent.	Westinghouse. Per cent.	Mond. Per cent.
Fuel:—			
Moisture.	4.21	1.39	2.0
Fixed carbon ..	53.16	74.28	65.0
Volatile matter..	35.41	16.01	27.0
Ash	7.22	8.32	6.0
Gas (per cent by volume):—			
Carbon monoxide	23.4	18.1	15.3
Carbon dioxide..	7.9	7.9	13.2
Hydrogen	17.1	12.6	19.35
Methane	2.1	2.6	3.85
Oxygen	....	0.5	....
Nitrogen, etc....	49.5	58.3	48.3
Calorific value (lower) B. T. U. per cu. ft.....	150.0	117.8	141.7

Well-designed installations working with suitable fuel have produced gas whose calorific value is as much as 85 per cent of that of the fuel burnt, even in small sizes. It is probable, however, that in every-day working the efficiency of the ordinary suction producer does not exceed 75 to 80 per cent, and most installations working with bituminous coal show a considerable lower efficiency than this.

It should be noted that when producer gas containing hydrogen or hydrocarbon compounds is burnt, the heat given up by the products of combustion is greater if the steam formed is condensed than if the steam is not so condensed, because of the relatively large amount of heat given out by each pound of steam in being turned to water. When speaking of the calorific value of such a gas, it is, therefore, necessary to know whether the higher value, allowing for the condensation of any steam formed, or the lower, or effective value is meant. The two quantities often differ by as much as 10 per cent. It seems right to take the lower value in gas producer work, since the products of combustion are always above 212 degrees Fahr. when they leave the engine, and the steam they contain, therefore, is not condensed.

Gas for use in gas engines must be clean, that is, practically free from dust or tarry matter which will cause obstruction in the passages or undue wear of the working parts of the engine. Such gas should be delivered to the engine at as low a temperature and at as high a density as possible, so that the engine may take in a charge having the greatest possible heat value. The gas should be uniform in quality and uninterrupted in supply, whatever the rate at which the producer is worked, and the operation of the producer plant should involve but little supervision and manual labor on the part of the attendants.

Gas producers using bituminous coals have been successfully used for industrial purposes, such as cement burning, steel melting, and the like, since the introduction of the Siemens producer and furnace in 1861, but such producers are usually of considerable size, and furnish gas which is neither clean nor cool. Freedom from tar, and low temperature of gas, are qualities of little or no advantage for furnace work; and fuel gas producers are, therefore, simpler

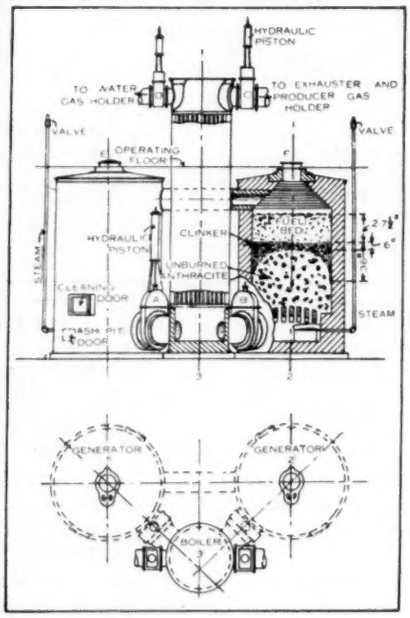


FIG. 5 — PLAN AND ELEVATION OF TWIN, DOWN-DRAFT PRODUCERS

and less difficult in operation than is the case with producers supplying gas for power purposes. A coal may be capable of giving satisfactory results in a large fuel gas producer, and may, nevertheless, give trouble when burnt in a producer furnishing gas for power purposes, especially if the producer is a small one. Fuel gas producers will not be discussed here, but the construction and operation of a few leading types of power gas producers will be described, in

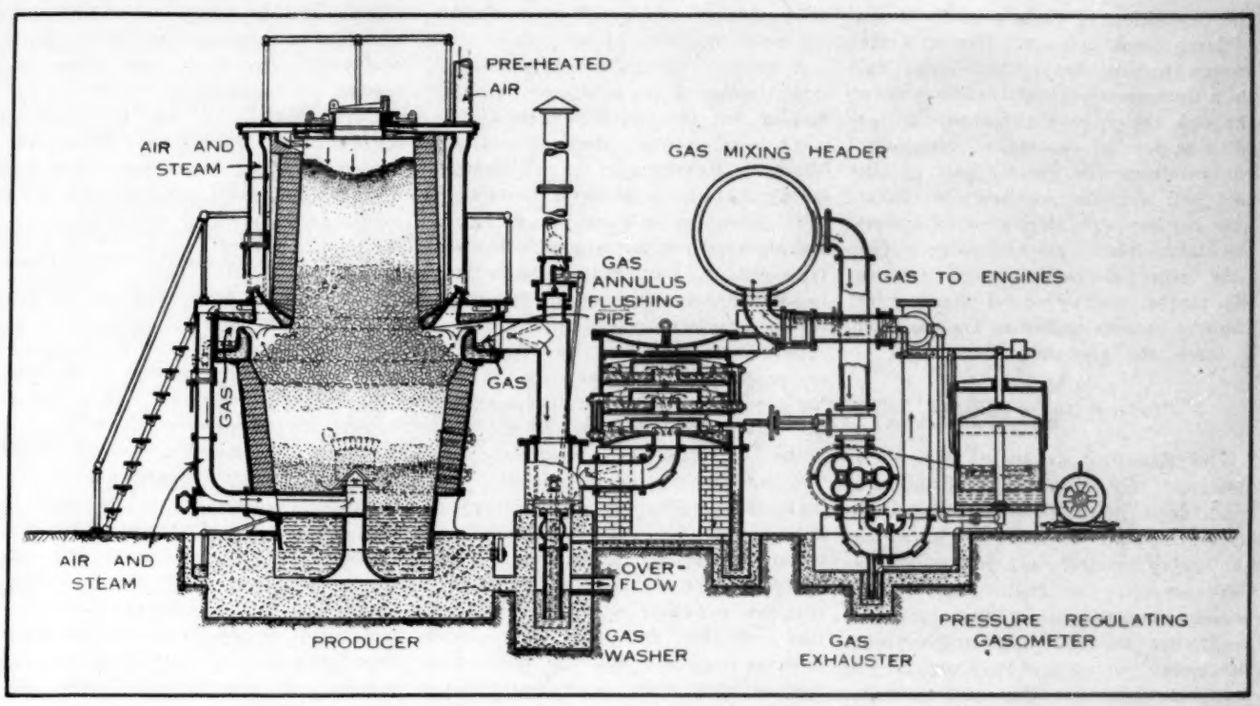


FIG. 6—VERTICAL SECTION OF DOUBLE-ZONE PRODUCER AND AUXILIARIES

order to illustrate the special difficulties involved in the use of bituminous fuels. Such fuels form the major part of the world's fuel supply, and power gas plants must be capable of utilizing bituminous coals if they are to compete successfully with steam plants under any but exceptional circumstances. The composition of certain typical gases made from bituminous coal for power purposes is shown in Table III.

If attempts are made to use bituminous coal in producers of such types as are shown in Figs. 1, 2, and 3, the first effect of the introduction of a portion of fresh fuel is that a quantity of the volatile matter is driven off by the heat of the already incandescent fuel bed. The resulting gas is then charged with hydrocarbons, the products of partial distillation of the fresh fuel, as well as with dust arising from the ash of the fuel bed. The tarry matter and dust are partly deposited in the pipe system, and partly removed in the scrubber, which rapidly becomes clogged, but a large amount of objectionable material passes over to the engine, where it soon makes its presence manifest by obstructing the ports and passages, and especially the gas and air valves, so that in a short time the engine ceases to work.

If the bituminous coal employed is of a caking quality the fresh fuel will tend to form a more or less solid layer adhering to the walls of the producer, and permitting the formation of a hollow space as the rest of the fuel burns away below. This layer has to be broken down by poking, a process which disturbs the regular operation of the producer, and is liable to cause rapid changes in the quality and composition of the gas generated, even

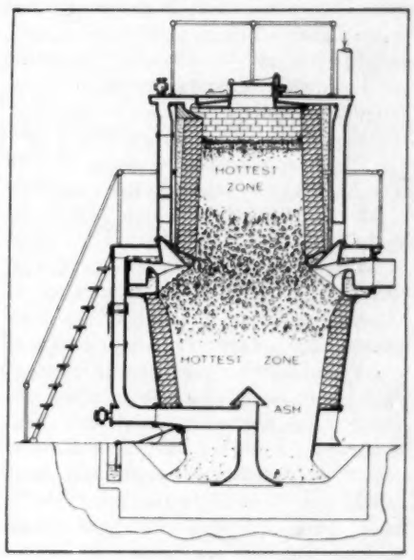


FIG. 7—CROSS-SECTION OF A DOUBLE-ZONE PRODUCER

if it does not render the supply insufficient for the engine. The resistance of the fuel bed to the passage of the gas will also change, and this change will be shown by an increase or diminution of the pressure in the producer and pipe system. In fact, it will be found that an ordinary suction producer equipment which will work perfectly with coke or anthracite fails entirely when tried with bituminous coal, even of non-caking quality. Difficulty from the sticking or hanging of the fuel bed will, of course, be more serious in a small producer than in a large one, for if the producer is of sufficiently large diameter the fuel layers will tend to break down under their own weight without the use of the poker.

Successful power gas producers for bituminous coal must, therefore, provide means for:

Destroying or removing the tarry matter arising from the fresh fuel charged.

Insuring a uniform downward movement of the charge as the fuel is consumed, without excessive manual labor, thus obtaining continuous and uniform quality of gas.

Avoiding the loss arising from unburnt carbon in the refuse.

Removing refuse without disturbing the operation of the producer.

The methods by which these ends have been more or less completely attained in actual producers will be seen from the descriptions which follow.

The products of distillation from bituminous coal, wood, peat, or other non-anthracite fuel contains various hydrocarbon compounds, which tend to break up into simpler forms, chiefly methane or marsh gas (CH_4), when heated to a temperature corresponding to a bright red heat, this process being often accompanied by

the deposition of carbon in the form of lamp black or soot. Hence, if the vapors arising from the fresh fuel in a bituminous producer be drawn through the most highly heated zone of that or of a second producer, the whole or the greater part of the tar will be decomposed or burnt and further difficulty avoided unless the lamp black gives trouble. The only other alternative is to remove the tar by some kind of washing or cleaning process applied to the gas after it leaves the producer.

Producer for Briquettes

The Koerting producer, Fig. 4, is designed for use with briquettes made from lignite, and may be taken as an example of the type in which the tarry matter is destroyed by exposure to a high temperature within the producer. This apparatus is similar in general principle to a producer patented by Dowson in 1903, and consists of a vertical body, 8 or 10 feet in height, arranged as shown, with a grate, *G*, at the bottom, and a gas outlet, *K*, about half way up. Air is admitted both at the top and bottom of the producer, and when running on lignite, which contains from 15 to 30 per cent of moisture, good gas can be obtained with fair efficiency without the admission of additional steam. The gas outlet is so formed that as much as possible of the air entering at the fuel inlet, *I*, must pass through the heated zone of the fuel before reaching *K*. A passage, *S*, which leads from the top of the producer to the atmosphere, is used for starting, and is closed by a valve during regular running. Provision is made for judging the condition of the fire and for poking, as required, by means of proper sight holes and poke holes. The position of the zone of highest temperature can be regulated by varying the relative amounts of air admitted at the top and bottom openings, in such a manner that the products of distillation from the freshly charged fuel are properly decomposed. The lower portion of the producer when working well contains only coked fuel resting on a bed of ash. The whole apparatus may be regarded as a combination of the so-called up-draft and down-draft systems, the passage of the gases being downwards in the upper and upwards in the lower portion. Such a producer would probably not work equally well with caking bituminous coal, as this fuel sticks or hangs in the producer much more than lignite, and poking in a deep producer of comparatively small diameter is not easy.

A producer plant in which the tar is decomposed in a second separate bed of hot fuel is shown in Fig. 5, which represents the Power & Mining Machinery Co.'s arrangement of twin producers, known as the Loomis-Pettibone system, a scheme very similar to that originally proposed in England by Sutherland in 1882, and since tried by many other experimenters.

In this arrangement two producers or generators, connected at the top, have valves, *A*, and *B*, leading from the spaces beneath the grates to a boiler or vaporizer. From the top the vaporizer valves, *C*, and *D*, conduct the cooled gas to either of two gas holders. Fuel is introduced through the hoppers, *E*, and *F*. The producers are worked in such a way that the products of distillation from the generator that has been coaled have to pass through the hot coked fuel in the other generator. There are several ways of doing this. One method is to work the two generators in parallel, with down-draft, supplying air only, until the temperature rises sufficiently. During this period, the tar from the top of each producer is decomposed in its own heated zone of coked fuel. The valves are then manipulated so that on supplying steam, without any air, to the base of producer No. 1, for example, and thus running it for water gas with up-draft, all gases distilled pass downwards through producer No. 2 and are there freed from tar. During this water-gas run, the temperature in both producers will fall, as the reactions occuring absorb heat instead of developing it, and the water gas produced, which is rich in hydrogen, is usually led to a separate gas holder. When the action has proceeded sufficiently, steam is shut off and air is admitted to both producers, which are worked down-draft as before, so that an air-gas run is made during which the producer temperatures rise, but will evidently be higher in No. 2 than in No. 1 where the water-gas has been made. A second water-gas run is then made, but this time the steam is supplied to the base of No. 2 while the gases pass downwards through No. 1 where the tar is dealt with. Another air blow follows, and the process is repeated indefinitely. Fuel can be charged into either producer while it is working with open top during the air-blow period. Installations of this type have given excellent results, but there is often some difficulty in effecting the proper removal of ash and clinker without interference with continuous operation, and close attention is required to maintain the uniform quality of gas and regular sequence of operations. The gas produced from bituminous coal is, however, of good quality, and such plants are capable of economic working and good efficiency.

Double Zone Producer

As an example of another arrangement for dealing with bituminous coal by destroying tar, the Westinghouse double-zone producer, introduced in 1909, may be selected. This apparatus, like the Koerting producer, is generally similar in principle to the Dowson producer of 1903, but contains means for generating the steam it requires. It has no grate, the refuse being removed through a water seal at the base, and the plant includes many novel accessories and features of construction. The producer is shown in Figs. 6 and 7, and from which it will be seen that the cast iron vaporizer, containing the gas outlet passage and a series of poke holes, divides the producer into an upper and a lower portion of different diameters. An air inlet pipe admits air to the steam space of the vaporizer, and vapor pipes, provided with supplementary air admission cocks, lead respectively to the spaces at the top of the upper portion of the producer and to the ash bed just above the water seal. Air and steam in any desired mixture can, therefore, be supplied to the fuel bed either at top or bottom, or at both, and the gas produced is drawn off by an exhauster from the central zone to the gas holder, if used, and engine. Sight holes enable the operator to judge of the condition and location of his fire. Toward the middle level of the producer the fuel is at a lower temperature, while the coke is completely burnt and another zone of combustion occurs near the bottom of the lower part of the producer. In connection with this make of producer, a gas-washer of special type designed for the removal of dust, a mixing header, and a special pressure regulator are employed.

The producers so far described are of the type in which the tarry matter is destroyed by exposure to a high temperature or burnt by a special air supply. Many successful power gas plants, however, are in use in which the tar is removed from the gas, together with the dust, by power-driven washing and cleaning apparatus. The producer plant succesfully used by

the United States geological survey in the St. Louis test was of of this kind.

Probably the largest and most highly specialized power gas installations now at work are those using the Mond process, in which the gas is mechanically cleaned, and this system is of considerable interest, especially as provision can be made for recovering certain of the by-products, such as ammonium sulphate, which are of commercial value. The Mond producer is of the updraft type with a water-seated bottom. It is worked under slight pressure from a blower, and the entering air is mixed with a large amount of steam (about 2½ times the weight of coal burnt), with the object of keeping down the producer temperature, so that any ammonia formed may be recovered and there may be no trouble from clinker. The hot gas leaving the generator is, therefore, mixed with much undecomposed steam, and this mixture gives up its heat in a regenerator to the incoming blast. The gas is then passed through a mechanical washer, and enters special cooling towers where the ammonia is abstracted. Ammonia recovery is not usually practiced in plants burning less than 30 tons per day, and the system as a whole is not easily applicable to small powers.

The Personnel of the Organization[1]

The evils arising from ill-designed and incompetent organization are many; the remedy is good organization. The fundamentals of good organization are: Correct design, specification of qualities, selection of qualities, economical purchase, responsibility of each part and combination into a workable unit.

Something has been done in the design, specification, test and inspection of materials and equipment. There is a splendid assortment of raw, semi-finished and finished materials available in the modern world, but to what extent are they selected? It is said that Henry Ford had been building good automobiles for several years before he learned that there were alloy steels.

But as to personnel, in design, specification, test, custody and inspection, we exercise far less care than for material and equipment.

Men vary in their aptitudes to as great a degree as do materials or equipment, and it is a crime against the position in the organization, as well as against the incumbent, for the wrong material or equipment or personnel, however skillfully designed, to be selected.

Unity

The essential of correct design is unity.

We see unity in plant life. Each tree is a separate unit. The line of supply of sap, of life for the leaf, runs straight back through twig and branch and limb to main trunk; it never criss-crosses through other leaves, or twigs, or branches, or limbs. That organization is defective in which smaller units do not aggregate into larger units, in which larger units do not subdivide into smaller and smaller units indefinitely.

A tree, one of the complex organisms in existence, illustrates how exceedingly simple the organization can be. The selection of a well-known man for a particular place is a very simple operation. The worst plan and the oldest is to create the position for the man. The next plan, almost universal, is to bring man and position together with very little reference to fitness. The only plan admissible in good organization is to select the man solely with reference to his aptitude for the position.

The best way to create a strong organization as to personnel is to specify aptitudes, test as to aptitudes, be certain as to aptitudes, and then to the firm foundation of aptitudes add experience. Experience is easily acquired when there is aptitude, days and weeks giving a proficiency not otherwise accumulated in months and years.

Ascertaining Quality

There are three ways to ascertain quality:

To rely on impressions.
To trust to demonstration.
To predetermine by analysis.

Impressions are unconscious analysis. All reliance on impressions is reliance on vague, indefinite analysis. Because of the vagueness and uncertainty of these impressions by which they have so often been deceived, men have rejected the method of impressions instead of developing it and have depended on demonstration.

Demonstration as a basis for selection is both crude, unnatural and fallacious. In industrial life it is a very common practice to appropriate men of demonstrated ability whom other concerns have discovered, evolved and trained. This is a very poor plan. It is destructive and weak, not constructive and strong.

The method of selection of materials, of equipment, of personnel by analysis, not by demonstration, ought to be always the modern method. On the basis of analysis I am willing to pay what I must for the best undeveloped personnel, and to have it generally known that I am seeking the best.

As to materials and equipment, our scientific methods enable us to forecast performance. Hitherto we have not recognized that individual aptitudes can be predetermined. Predetermination of individual aptitudes enables us to a far greater degree than hitherto, to create a reliable organization and to influence favorably and with certainty both management and operation.

Individual aptitudes are accurately and minutely predeterminable, much more simply than is known. The four fundamental requirements are:

Health and physical soundness.
Intelligence or mental soundness.
Honesty or moral soundness.
Industry or soundness in action.

Physically, mentally, morally or industrially unsound men, even though few in number, corrupt a whole organization. More, better and cheaper work can be accomplished with 7,500 men than with the same 7,500 and 2,500 added undesirables.

Judging Character

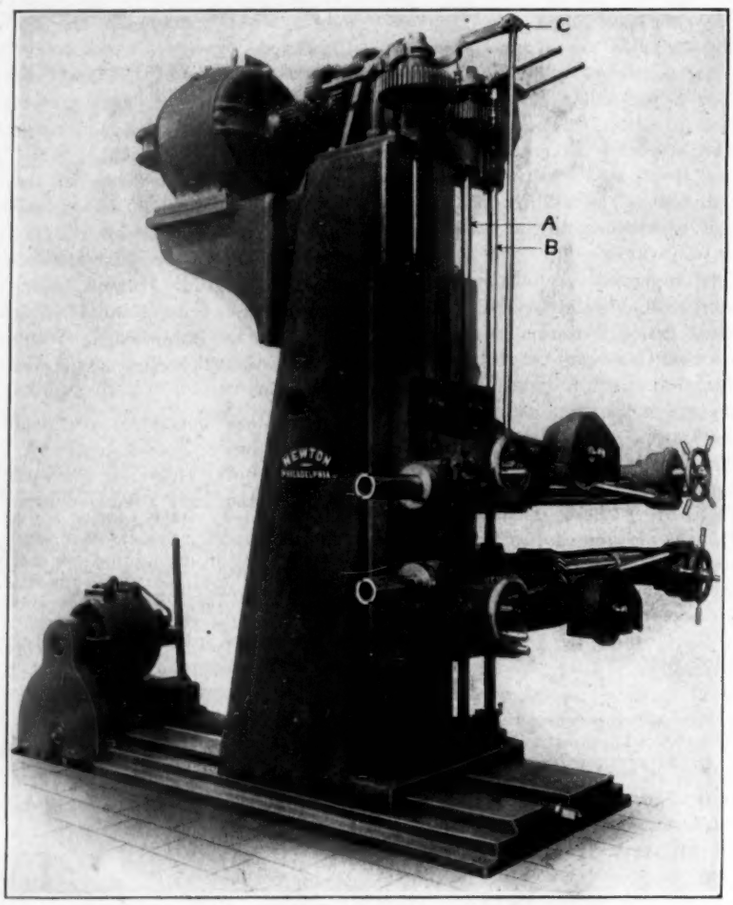
The exclusion of the unemployable leaves a clean, intelligent, reliable, industrious body of men from whom further selections are to be made. Would not nine-tenths of all disasters that overtake industrial plants, whether financial or due to labor difficulties, be impossible if all employes, including executives, were sound, intelligent, honest and industrious?

The positions in any organization fall into motive, vital or mental categories, or into combinations of any two or all three of them in endless variety. It is exceedingly easy to subdivide men into motives, vital or mental. Under the haphazard, usual plan we would run two chances out of three of filling the motive or the

[1]Abstract from paper entitled "The Creation of Organization With Special Reference to Personnel," presented by Harrington Emerson before the Efficiency Society.

vital or the mental place with the wrong man.

But there are other qualities besides those of motivity, vitality and mentality. What do we mean when we call a man thin-skinned? What do we mean when we say a man has the hide of a rhinoceros? We are judging from manifestations of character. If we reverse our observations and judge of the brain from the skin, we find that the sensitive, delicate-minded man has a fine-textured skin, that the coarse-minded man has a coarse-textured skin. The skin was and is the original seat of all sensation before there were eyes or ears.



DOUBLE SPINDLE HORIZONTAL BORING, DRILLING AND MILLING MACHINE

The skin is still the most sensitive of our organs. We can feel differences of a thousandth of an inch in fitting metal surfaces, differences we cannot possibly see. A man's skin indicates the texture of his brain.

The convex face, the one with prominent nose, but receding forehead and receding chin, has opposite characteristics from the concave face in which the forehead and chin are prominent and the central portion receding.

The greyhound, with sharp nose, receding forehead and receding chin, has big lungs, but a small heart; therefore, immense capacity for a spurt, but no persistence. The bulldog has prominent forehead, prominent chin, snub nose—he, therefore, has small lungs, but a big heart. He is not as quick as the greyhound, but can hold on to death.

I have indicated but a few of the superficial indications of aptitudes. Nature is not haphazard.

In a large company employing about 5,000 men, Dr. Katherine M. H. Blackford, whose original and extended work in formulating and applying the science of character analysis has received recognition both in this country and abroad, has been entrusted with the organization of an employment department in which the methods of scientific analysis and synthesis are employed with success. The main results to date are that unemployables have been excluded, the cream from hundreds of applications have been appointed and good men already employed are being gradually reassigned for the company's as well as their own good.

Investigation shows that in most industrial plants at least three-quarters of the men are badly placed, which does not in the least mean that the men are undesirable. An intelligent readjustment and reassignment of positions without discharge may improve the efficiency of a plant 30 to 40 per cent.

Those who are charged with the duty of creating an efficient, economical, scientific organization will do well to look before they leap, to draw on all available sources of information, particularly to study those examples which nature, by a long process of elimination, has evolved.

A Boring, Drilling and Milling Machine

A double-spindle, horizontal boring, drilling and milling machine, built by the Newton Machine Tool Works, Inc., Philadelphia, is shown in the accompanying illustration. The spindles are 3½ inches in diameter and have a No. 4 Morse taper with retaining and drift key slots. The length of feed and hand adjustment on each spindle is 30 inches and the minimum distance between the centers of the spindles is 6½ inches, while the maximum distance is 30 inches. The minimum distance from the center of the bottom spindle to the floor plate is 24 inches and the maximum, 54 inches. This range gives a capacity for drilling holes in any position from a minimum distance from the floor plate of 24 inches to a maximum distance of 54 inches. The upright has a 48-inch movement on the base by hand or fast power traverse, which is reversible. The spindles are driven by worms and worm wheels, the former being made of bronze and the latter are steel. In addition to three changes of gear feed, quick and slow adjustments are provided. The drive to each spindle is independent.

The machine is driven by an Otis 12-horsepower motor, operating at 300 to 1,200 revolutions per minute and providing spindle speeds of 8.8 to 150 revolutions per minute. The feeds per revolution of spindles are 0.0045, 0.0094 and 0.0124 inch. Power is transmitted from the motor through spur gears, either direct or through back gears to the vertical spline shafts, *A* and *B*, which are clutched independently. The vertical elevation of the main spindle saddle is effected by operating the lever, *C*, controlling the engaging clutch and the reverse of the elevation is obtained by reversing the motor.

The bottom spindle revolves in bronze-bushed bearings on the main saddle and the top spindle is mounted on an auxiliary slide, which has adjustment on the main saddle in order that the desired distance between the centers of the spindles can be obtained and the main saddle raised or lowered to drill any number of holes at dif-

ferent heights, although retaining the original center distance. The machine is particularly adapted for drilling holes in motor frames, generator frames, etc. For adjusting the upright on the base by power, a 3-horsepower motor is provided.

A New Westinghouse Motor

A direct current motor, especially designed for driving bending rolls, raising the cross rails of planers and boring mills, moving the stocks of lathes and similar service requiring torque characteristics, is now being built by the Westinghouse Electric & Mfg. Co., East Pittsburgh. As shown in the accompanying illustration, the special feature of this motor is a heavily compound field, most of the excitation being due to the series coils. The torque, therefore, increases rapidly as the current increases, a characteristic that is essential in starting a cross rail and taking a plate through bending rolls. The shunt field winding limits the no-load to approximately twice the full-load speed, so that racing is impossible. The frame of the motor is made of rolled steel, the shaft of axle steel and the bearings are large and are dust and oil-proof. The commutation is practically sparkless, due to the use of commutating poles and to the careful design of the commutator and brushes. These motors are made in capacities of from 3 to 40 horsepower for 220-volt, direct current circuits.

Tapers for Safety Emery Wheels

To the Editor:—

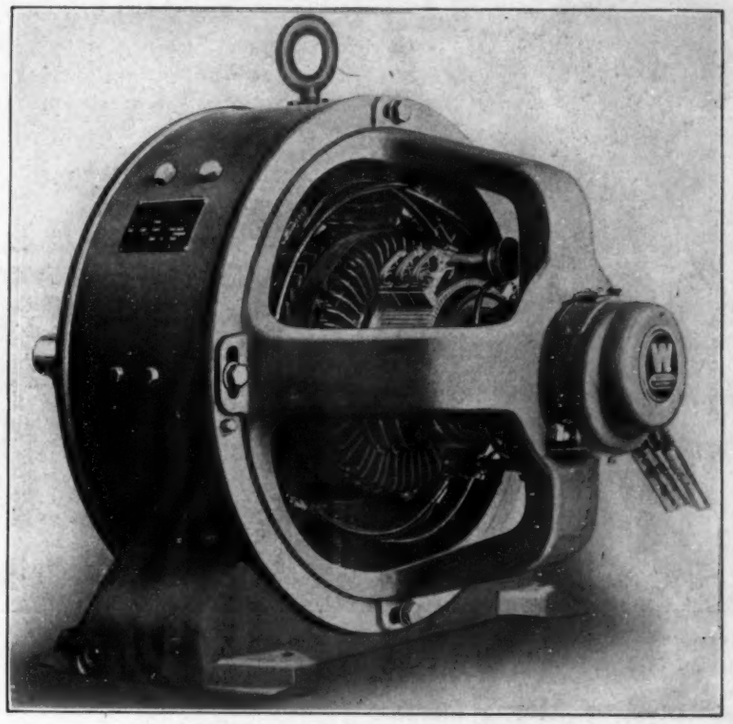
The standardization of emery wheel shapes and steel safety collars should receive the immediate attention of both manufacturers and users of grinding wheels. Unless such a standard is adopted and complied with, the use of safety shape wheels and safety collars will increase, rather than decrease the hazard of the operation of these wheels. Many users of grinding wheels recently have undertaken to make their own safety collars and many of these do not conform to any of the standards on the market. In addition, some manufacturers of grinding wheels will make these collars to conform to any shape. This practice should be stopped. Formerly, the Pittsburgh Emery Wheel Co., Pittsburgh, tapered its collars ¾ inch per foot, the wheels having been tapered on both sides. Many of these collars were made with a 6-inch flat spot at the center. This has been changed to a 4-inch flat spot in the collars and all wheels now have a 6-inch flat spot.

One emery wheel manufacturer formerly tapered collars ½ inch per foot with a 4-inch flat spot, but some years ago this taper was changed to ¾ inch to the foot with a 4-inch flat spot. Another grinding wheel company tapers its collars ¾ inch to the foot and some of these have a 4-inch and others a 6-inch flat spot.

The writer knows of a number of instances where wheels with a ½-inch taper have broken and large pieces became disengaged from the collars, resulting in the injury or death of the operators. On the other hand, wheels tapered on both sides with a taper of ¾ inch per foot, protected by collars which fit the wheel, the collars being 4 inches less in diameter than the wheel, have resulted in practically no casualties or serious damage during the 10 years that this taper has been adopted.

Nearly every wheel tapered ¾ inch will break when protected with collars having a ½-inch taper and the broken pieces of the wheel will become disengaged from the collars, which will open at the rim. A wheel with sides tapered ½ inch per foot will not necessarily break if used in collars with a ¾-inch taper, but the constant use of ½-inch tapered wheels and ¾-inch tapered collars will ruin the collars for subsequent use for ¾-inch tapered wheels. This is due to the fact that the collars will spring in the center as a result of the tightening of the nut on the spindle. If more than 2 inches on the wheel is to be exposed beyond the safety collar, a safety hood should be mounted on the machine in addition to the collar. If all manufacturers of wheels will give them a taper of ¾ inch to the foot with a 6½-inch flat spot, and if they will make all collars for wheels with a ¾-inch taper with a 4-inch flat spot, and if all users of emery wheels, who make their own collars, will conform to this standard, no further difficulty will be experienced. These specifications apply to wheels more than 12 inches in diameter. For grinding wheels 12 inches and less in diameter, we shall adopt hereafter a 3-inch flat spot, thereby permitting the use of collars 6 inches in diameter. This does not apply to 12-inch stubs of larger wheels. If users of grinding wheels will insist on a ¾-inch taper per foot with 6-inch flat spots, a standard can easily be established.

CHARLES G. SMITH, President,
Pittsburgh Emery Wheel Co.,
Pittsburgh, Pa.



A NEW WESTINGHOUSE DIRECT CURRENT MOTOR

First Use of Electricity in Steel Mills

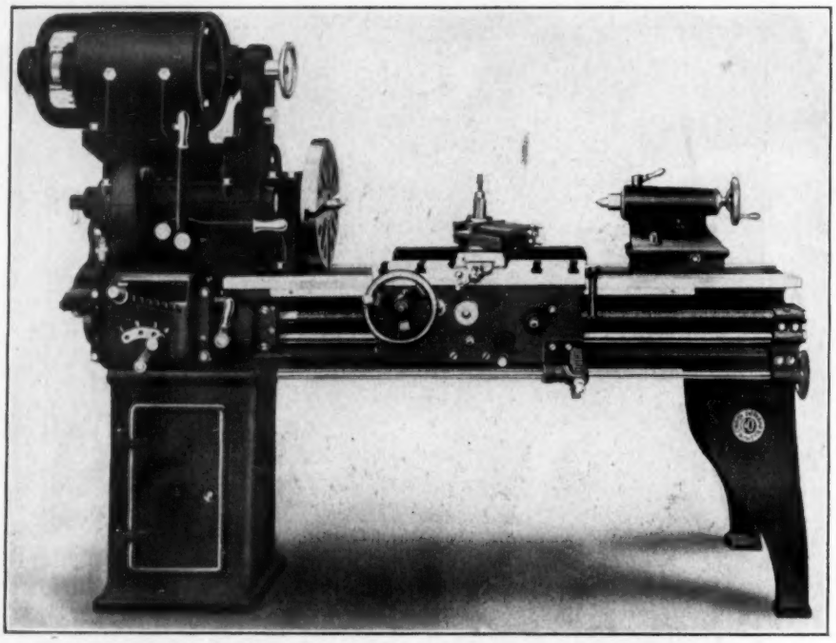
To the Editor:—

In the Feb. 13, 1913, issue of THE IRON TRADE REVIEW, page 410, was published an article entitled, "Electric Power Distribution in Steel Mills". The statement was made that electricity was first

used in steel mill work for lighting purposes in 1881 at the Brown, Bonnell plant at Youngstown, O., and that about 10 years later the Carnegie Steel Co., Pittsburgh, installed a 50-horsepower generator at its Edgar Thomson Works, Braddock, Pa.

In this connection, I wish to call attention to the fact that the Phoenix Iron Co., Phoenixville, Pa., installed two Brush arc generators in 1877, one having been driven by a water wheel and the other by a steam engine. In 1881 we installed a third machine for lighting purposes. This was of the Thomson-Houston type and was steam engine-driven.

F. P. NORRIS, Manager,
Phoenix Iron Works, Phoenixville, Pa.



MOTOR-DRIVEN LATHE BUILT BY THE CONOVER-OVERKAMP MACHINE & TOOL CO.

Distribution of Mining Development in the United States

Edward W. Parker, of the United States geological survey, presented an interesting paper, entitled "The Geological Distribution of Mining Development in the United States," at the recent New York meeting of the American Institute of Mining Engineers. He said that the states east of the Mississippi river, which comprise only 28.8 per cent of the total area of the United States, exclusive of Alaska, contribute about two-thirds of the total mineral production, computing by value. In 1910 the percentage of the production credited to the eastern states was 67 and in 1911 it was 65.

Coal is the principal product in 16 states, namely, Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, New Mexico, North Dakota, Pennsylvania, Tennessee, Virginia, Washington, West Virginia and Wyoming. It is the secondary product in Colorado, Ohio and Texas and is third in Montana and Oklahoma.

Iron ore is the principal product in Minnesota and is second in Alabama and Michigan and third in Georgia, New York, Virginia and Wisconsin.

Copper is the principal product in Arizona, Michigan, Montana and Utah and is second in Nevada, Alaska and Tennessee.

Lead is the leading product in Idaho and Missouri, but is relatively unimportant in other states.

Zinc is the most important mineral product in Wisconsin and is second in importance in Missouri and third in New Jersey.

Based on the statistics of production in 1911, the percentages of the principal mineral products in some of the leading mining states follow:

Alabama, coal, 68 per cent, and iron, 17 per cent.

Colorado, gold, 37 per cent; coal, 28.4 per cent, and zinc, 9.4 per cent.

Illinois, coal, 56 per cent, and petroleum, 18.5 per cent.

Michigan, copper, 42 per cent; iron, 37 per cent, and coal, 4 per cent.

Minnesota, iron, 90 per cent.

Missouri, lead, 31 per cent; zinc, 26 per cent, and coal, 12 per cent.

New York, iron ore, 7 per cent, and clay, 25 per cent.

Ohio, coal, 33 per cent; petroleum, 9.8 per cent, and natural gas, 9.6 per cent.

Pennsylvania, coal, 77 per cent; clay, 5 per cent; natural gas, 4.5 per cent, and petroleum, 2.5 per cent.

Tennessee, coal, 40 per cent, and copper, 13 per cent.

Utah, copper, 43 per cent; silver, 15 per cent; lead, 12 per cent; gold, 11 per cent, and coal, 10 per cent.

Virginia, coal, 46 per cent, and iron ore, 8 per cent.

West Virginia, coal, 53 per cent; natural gas, 28 per cent, and petroleum, 10 per cent.

Wisconsin, zinc, 30 per cent; iron ore, 11 per cent, and lead, 9 per cent.

Motor-Driven Lathe

A motor-driven lathe, built in 14 and 16-inch sizes by the Conover-Overkamp Machine & Tool Co., Dayton, is shown in the accompanying illustration. The headstock is cast in two sections, the lower half forming the headstock proper and the upper half forms the base for the motor and covers all operating parts, thereby eliminating gear guards. The back gears are placed in front of the headstock, making them accessible to the operator without compelling him to walk around the lathe to throw the gears in or out. The drive is obtained from the motor shaft pinion through an intermediate gear to the friction gear on the spindle. This friction gear permits the lathe to be started or stopped while operating and without changing the speed of the motor. The headstock is equipped either with single back gears or double friction back gears and when provided with the latter, the gears are operated by a vertical lever at the front of the headstock.

With a 3 to 1 variable-speed, direct current motor, a wide range of spindle speeds can be obtained. The motor is controlled by a lever on the apron.

The Freezing of Steel

At the recent New York meeting of the American Institute of Mining Engineers, John E. Stead, of Middlesbrough, England, contributed an interesting discussion of Benjamin Talbot's paper entitled "The Production of Solid Steel Ingots." He said that he had proved repeatedly Dr. Henry M. Howe's description of what occurs when steel freezes in an ingot. Dr. Howe stated that the crystallites, when the greater part of the metal has become solid, bridge across from the internal walls of the inside of the ingots as they slowly solidify and this mass sinks or sags downwardly as the liquid in the central column of

the liquid contracts. Mr. Stead stated, however, that if an ingot is large and is cooled slowly when the central column is still liquid, it is almost certain that many of the crystallites break away from the sides and fall to the lower part of the ingot. This was offered as an explanation of how the steel in the lower central axis of large steel ingots is purer than the average.

In every ingot, at one period during solidification, there is a central column of metal that can flow and this is surrounded by an annular layer of steel almost completely solid, but incapable of flowing. This readily breaks up when an effort is made to extend it and is most tender where it approaches the inside pulp and it is strongest where it joins the annular layer of solid steel. When an ingot in this physical condition is passed through the rolls, the outer solid layer will extend without breaking and the annular, pulpy mass will flow, but the intermediate annular layer will fracture and will form fissures, only terminating when they reach the completely solid steel.

The examination of several auto-sulphur prints of complete ingot sections, and of blooms, has shown that the crystallites in 10-inch ingots, even without cooling in the soaking pits, are sometimes 0.2 inch and more in length. The crystallites in the central column are generally smaller than those in the intermediate layers between the outside and the center. One explanation for this is based on the assumption that the crystallites shoot continuously into the central column during the time the mold is not disturbed and that the smaller crystals form when the ingot is removed from the pit and the liquid inside is more or less shaken.

The Arc Welding Process[1]

By J F Lincoln

The welding of metals by the use of the electric arc dates back to the experiments of Dr. Bernardo prior to 1892. He first successfully used the electric arc for the melting of metals so as to join them together as a weld. After these successful experiments, which were made in the laboratory, arc welding was not used commercially for a good many years, the chief reason being that difficulties which would arise, supposedly of a chemical nature and, therefore, insurmountable, were really the results of clumsy handling. Within the last three or four years, however, the adaptation of the electric arc to the welding of metals has become prominent and is becoming increasingly so.

The electric welding of metals, or the welding of metals by any other process, depends upon heating to a welding temperature the two pieces which are to be welded, and then putting them together at that temperature, applying pressure if possible It makes no difference whether the metals are heated by an arc, by oxy-acetylene, by the blacksmith forge, blast furnace or any other process, the results are the same.

What the Arc Welder Is

Reduced to its simplest terms, an arc welder is a transforming device for changing current at a high voltage or of a kind which is not applicable to the electric arc to current which is easily applied to the electric arc. All arc welders do this more or less satisfactorily.

The changing of the current which is necessary for the best application of the arc is first the reduction of the voltage to a value somewhere between 30 and 60 and then some kind of an arrangement so that this voltage will be reduced as the current increases. In other words, as the resistance of the arc decreases on account of increasing current, the amount of current that flows must not increase to a point which will burn the weld or give varying results. That is, the welder must have a dropping characteristic so that as the current flow increases the voltage will drop, and drop considerably.

First Type of Arc Welder

The first types of arc welder were of resistance units, either a water rheostat or grid resistance which placed sufficient resistance in the circuit so as to reduce the voltage to the proper point for use in the arc. This is a very satisfactory method for arc welding and the only disadvantage is that about 65 per cent of a 110-volt current and 85 per cent of a 220-volt current is wasted in the resistance. Another bad feature is the fact that it is rather difficult to handle large currents through resistance in a satisfactory manner on account of the burning-out of the resistance units.

Another type consisted of a motor-generator set, the only possible advantage of which over the resistance method being some current saving. There are many devices of this kind which give a satisfactory arc and save some of the current which was lost in the resistance type. With the motor-generator set it is necessary to keep a considerable amount of resistance in circuit in order to act as a ballast, or to limit the amount of current when only a small amount is required.

The arc welder built by the Lincoln Electric Co., Cleveland, is a single machine which in appearance resembles the generator of about the same capacity. It has, in its simplest form, a single commutator and five brushes. No resistance is used in any part of the welder, or for its control, thus very materially assisting in keeping it simple. The controlling panel has four controlling switches, which, by changing the connections in the welder fields, varies the amount of current in the arc and the voltage at the arc. All current variations are automatic and by a combination of the switch-controlled connections, and by varying the length of the arc, a continuous and unbroken line of current values can be obtained at the arc from the maximum capacity of the machine to a very small part of the full current rating.

This arc welder also can be short-circuited without damage and without taking a current from the line which is in any way harmful. In fact, the short circuit power is much less than full load power. This machine operates under all conditions without any sparking or injurious heating.

Principle of Operation

The principle of operation follows: On a motor with an armature with the usual wave winding is superimposed a series field on interpoles between the main poles. This series field is variable by taking various taps out of it which make it easily changeable. An arc brush is placed between

[1]From a paper presented before the American Foundrymen's Association.

the main brushes from which the arc current is taken. The field which generates this arc current is weakened by the arc current flowing in the series coils. By varying the resistance of the arc, by changing its length or by changing the number of turns in the series field, the control is obtained.

The usual application of the electric arc in welding is made by forming an arc between a carbon electrode and the piece to be welded. Since the piece which is welded is the positive electrode, practically all the heat of the arc is liberated here, very little being released at the negative carbon electrode. Into this arc is passed the filling metal which rapidly melts off and drops onto the positive electrode, kept at a welding temperature by the arc. In this way a weld which is perfect can be made because both the filler and the piece to be welded can be kept at a temperature at which the metal is fluid; 95 per cent of all arc welding is done in this way.

There is another application for the electric arc, however, which is used to some extent in certain classes of work where the weld must be made overhead or on the side of a piece into which the molten metal cannot be dropped. For this application an electrode of metal is used, this electrode itself being the filler. As the arc is established the metal electrode slowly melts off, sticking onto the part already heated by the arc.

Metal Electrode Welding

To succeed by this process it is necessary for the work to be done very slowly compared with the carbon arc method and it is also possible to maintain the arc only a very short time, for as soon as the arc flows long enough to get a bead of melted metal on the end of the electrode, this is touched to the piece to be welded. This work, often called metal electrode welding, is especially applicable in the case of overhead boiler work or firebox work where the defective part cannot be placed so that it can be operated upon by the electric arc. To successfully accomplish this work it is necessary to have a very small current flowing and also to have this current at a low voltage. Voltages below 30 are generally used and current values of from 100 to 200 amperes are required. This metal electrode work is apt to be unsatisfactory unless carefully done on account of the fact that the metal welded on must be heated to a welding temperature and the point it touches must also be heated to the same temperature. Since the arc is established for but short periods, the positive electrode often does not come up to a welding temperature before the melted bead on the negative electrode must be applied. However, if the work is skillfully handled, successful welds of this kind can be made which will show a very large percentage of the original strength.

Strength of the Weld

The question is often asked, "What is the comparative strength of a piece of welded material when compared with the original material?" In a general way, the statement is true that the weld is equally as strong as the original piece, providing that the original piece is of the same quality and kind of metal as the filler used. This statement, however, does not fully comprehend the difficulties in the way of getting a weld which is as strong as the original piece. A steel casting can be repaired by the use of the arc welder and a weld can be made the strength of which will exceed 60,000 pounds, which is as strong as the average steel casting. The strength of the weld is practically constant when properly made and is approximately 60,000 pounds per square inch. Whether it is stronger or weaker than the original piece depends on the strength of the section.

The steel foundry was the first plant in which the electric arc was used commercially. Its application here is in patching defective pieces, sand holes and for cutting off risers and heads.

Cutting Steel

In the cutting of steel, the electric arc has another application. It is used extensively for cutting sheets, boiler plate, etc. This work can be done cheaply and efficiently when compared with punch press, cold saw or any other method of cutting.

The question is often asked, "Can a weld on a casting be machined as readily as any other part of the casting?" The answer to this is self-evident in case of steel, since a mild steel casting will not harden with quick cooling. In the case of cast iron, however, if the casting is not quickly cooled or if any effort is made to cool it slowly, there is no chance of any difficulty on account of hardness of the weld. If a high carbon steel is used as a filler, the carbon in it is very largely burned out by the arc itself before the weld is completed, so that the steel in the weld will actually be of very low carbon content. The fillers which are actually used, therefore, in the case of all steel casting work is a soft machinery steel or better a Norway iron, since the carbon content will be practically the same no matter what the original carbon content of the filler may have been. In the case of gray iron a very high silicon iron is used. The silicon content is reduced to a considerable extent, but when the weld is completed there are still all the characteristics of gray iron in the filler.

Electro-Metallurgy in Canada

The annual report of the Canadian department of mines is authority for the statement that the past year has witnessed little progress in the application of electro-metallurgy to the iron and steel industry of Canada. Although the development of the electric furnace is of comparatively recent date, the experiments which have been carried on in Europe and particularly the practical application of the electric furnace to iron smelting at Trollhatten, Sweden, have demonstrated the future utility of the process.

The abundance of undeveloped water power in portions of Canada where suitable fuel supply is not available would point to the ultimate employment of the electric furnace in the reduction of iron ores. In many parts of Canada the same conditions are found as those prevailing in California, where the electric furnace seems to be demonstrating its commercial utility.

The deputy minister of mines is inclined to ascribe the lack of progress along electro-metallurgical lines to the over-conservative tendency of Canadian business men and the lack of the spirit of inquiry which is prevalent in Europe and the United States.

There is consumed in the United States annually approximately 2,665,000 tons of sulphuric acid in the industrial arts. Of this total, 2,400,000 tons are used in the production of phosphate fertilizer, 300,000 tons in refining petroleum, 200,000 tons in the coke, iron and steel industries, 150,000 tons in the manufacture of explosives and the remainder in a variety of other commercial uses. According to Utley Wedge, in 1911, 2,665,000 tons were made from pyrites, 285,000 tons from blende, 275,000 tons from copper sulphide ores and 25,000 tons from brimstone.

CHANGING CONDITIONS

Must Be Squarely Met, Says Acting Commissioner Hibbard.

At the annual meeting of the Cleveland branch of the National Metal Trades Association, March 6, John D. Hibbard, acting commissioner of the National association, was a guest and spoke briefly. "Shorter hours are coming," he said, "whether we like it or not; higher wages are coming, whether we like it or not, and there will be other changes in the industrial system and we might as well look the facts squarely in the face.

"I do not know," said Mr. Hibbard, "whether there is any solution of the labor problem. There will always be differences between buyers and sellers. Hence, there will always be matters of dispute between capital and labor. But I see no reason why the employers and the employes cannot dwell in peace and be friendly. To that extent, I believe we can solve the problem, and in that important work, the National Metal Trades Association, perhaps more than any other organization, will be depended upon to lead."

C. B. Wilson, of the Ferro Machine & Foundry Co., presided at the meeting and was tendered a vote of thanks for the very efficient service which he has rendered as president of the Cleveland branch during the past year. He declined re-election, and James H. Foster, of the Hydraulic Pressed Steel Co., was chosen to succeed him. Other officers and members of the executive board as follows were selected:

Vice president, Frederick Metcalf, Chase Machine Co.; treasurer, Franklin Schneider, Van Dorn-Dutton Co.; members of the executive board, George Cowley, Hill Clutch Co., J. H. Francis, Kilby Mfg. Co.; Christian Girl, Perfection Spring Co., and C. B. Wilson, Ferro Machine & Foundry Co.

Secretary Philip Frankel, in his annual report, called attention to the activity of the Industrial Workers of the World, which has caused considerable trouble in Akron, O., and has a number of spies and other representatives scattered about the manufacturing districts of Cleveland. Mr. Frankel quoted a vice president of the machinists' national union as saying that there are 30,000 machinists in Cleveland, of whom less than 1,000 are members of the union. The work of the local branch of the N. M. T. A. during the past year consisted mainly in preventing strikes and watching legislation. Mr. Frankel referred to the numerous measures pending in the state legislature inimical to the employing interests of the state, but to date, he said, not one bill for the regulation of labor organizations has been heard of in spite of the large amount of lawlessness, including dynamiting, that can be directly traced to such organizations. Mr. Frankel declared that although manufacturers had been willing to spend large amounts of money in past years resisting the unfair demands for higher wages, regulation of apprentices, the closed shop and other features of the union program, the same manufacturers sit idly by and permit these labor organizations by means of legislation to declare legal the things that the manufacturers so forcibly resisted when combating strikes. "Employers," he said, "have become almost completely passive on the matter of legislation being introduced at Columbus."

James Bryce, president of the Trade and Workers' Association of the United States, of Battle Creek, Mich., addressed the meeting, urging the importance of education of workingmen in favor of the open shop.

NEEDS STEAMERS

Canadian-Venezuela Ore Co. is Seeking More Ships.

Toronto, Can., March 11.—At the annual meeting of the Canadian-Venezuela Ore Co., recently held in Montreal, F. P. Jones, the president, reported that progress on the company's properties was satisfactory, the principal difficulty being to secure ocean steamships for the transportation of the ore. Only one steamer was at present employed in carrying supplies to the mines and ore to Philadelphia. Four 4,000-ton barges had been purchased to carry ore to Trinidad where it would be transferred to ocean vessels. So soon as other steamers were procured shipments could be increased at once to 6,000 to 7,000 tons per month, and in about six months to 40,000 tons per month. At present the company is under contract to deliver 100,000 tons per year. President Jones stated that this quantity could be increased at any time.

Will Build Stack

The Robesonia Iron Co., Ltd., Robesonia, Pa., will build a new blast furnace stack and has retained Frank C. Roberts & Co., Philadelphia, as engineers.

INCREASED EARNINGS

Shown by Annual Report of Lackawanna Steel Co.

During the calendar year of 1912, the Lackawanna Steel Co. realized a profit of $1,008,811, according to the annual report just made public. In 1911, the profit of the company was $82,833. Gross sales and earnings in 1912, increased $6,225,990 over the preceding year. The profit and loss account of the company, compared for the two years of 1912 and 1911, is as follows:

	1912.	1911.
Gross sales and earn..	$27,266,376	$21,040,387
Mfg. cost and op. exp.	22,296,737	17,394,307
Inc. from mfg., oper..	4,969,638	3,646,080
Oth. income.....	743,760	584,913
Total income	$5,713,407	$4,230,993
Gen. exp., tax disc, etc.	807,965	739,515
Net earnings	$4,905,442	$3,491,478
Int., rent and royalties	2,182,848	2,206,436
Surplus	$2,722,594	$1,285,042
Skg. fd. dep and renw.	1,713,783	1,202,239
Surplus	*$1,008,811	$82,803
Prev. surplus.....	3,830,507	3,747,704
Total surp.	$4,839,319	$3,830,507
†Appropriation	.....	.....
P. & L. surplus.....	4,839,319	3,830,507

*Equal to 2.91 per cent on $34,728,000 capital stock as compared with 0.24 per cent on same stock previous year.

†Special appropriation for entire discount on first consolidated mortgage bonds and gold debentures.

President E. A. S. Clarke, of the company, in his annual report to the stockholders, speaks favorably of the future outlook. He says the company has orders on hand sufficient to keep its works fully employed through the third quarter of the current year and conditions seem favorable for the full 12 months.

Philadelphia Foundrymen Meet

Following the regular business meeting of the Philadelphia Foundrymen's Association, at the Hotel Walton, Philadelphia, on Wednesday evening, March 5, A. C. Warren, mechanical engineer, associated with J. W. Paxson Co., Philadelphia, gave a most interesting talk on sand blast equipment for foundries and other purposes. With the assistance of I. F. Krewer, a large number of lantern slides were presented, showing many installations in this section of the country. Some views of installations made 10 to 15 years ago brought out forcibly the great advancement that has been made in the development of sand blast equipment since that time, resulting in the present high efficiency of such machines.

The Cambria Steel Co., Johnstown, Pa., has awarded an increase in wages to laborers. Advanced wages became effective March 1.

THE IRON TRADE REVIEW

DEVOTED TO THE IRON, STEEL, MACHINERY AND FOUNDRY INDUSTRIES

Published Every Thursday by

The Penton Publishing Company

CLEVELAND

CHICAGO - - - - - - - - - - - 1328 Monadnock Blk,
CINCINNATI - - - - - - - - 503 Mercantile Library Bldg.
NEW YORK - - - - - - - - - - 1115 West St. Bldg.
PITTSBURGH - - - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - 501 Metropolitan Bank Bldg.
BIRMINGHAM, ENG. - - - - - - - Princes Chambers

Copies published three months or more previous to date of current issue, 25 cents each

All communications relating to changes of advertising copy, discontinuances, etc., must be received ten days prior to the next publishing date.

Subscription, United States and Mexico $4.00 per year.
Canada and other Foreign Countries $5.50 a year

Entered at the Postoffice at Cleveland as Second Class Matter.

Copyright 1913, by the Penton Publishing Co.

Cleveland, March 13, 1913

Placed Again in the Chair He Disgraced

The re-election of Frank M. Ryan to the presidency of the International Association of Bridge and Structural Iron Workers is an astonishing act of defiance of public opinion and an amazing expression of contempt for the law.

After prolonged and careful consideration, the jury at Indianapolis convicted Ryan of conspiracy in the dynamiting cases. Ryan was sentenced to seven years, the longest sentence given any one of the numerous dynamiters who were convicted. The slightest regard for common decency would have dictated that Ryan retire from public gaze after his release on bail from the Leavenworth prison and remain in obscurity at least until his case is finally passed upon by the highest court. Be it said to the everlasting credit of about two-fifths of the delegates to the Indianapolis convention that they vigorously opposed the re-election of Ryan, but he was again placed in the presidential chair which he had disgraced.

If there are members of the Structural Iron Workers' Union, as we believe there are, who are opposed to dynamiting and all forms of violence, such men ought to cut loose entirely from the union if it persists in keeping a convicted man at the head of the organization, in addition to allowing other convicted members to participate in the proceedings. Structural iron workers who have some regard for law and order may well follow the example of the Socialists' organization, which has ousted William D. Haywood from the national executive committee of the party. While Haywood in his speeches and other actions has been guilty of highly reprehensible conduct, he has never, we believe, been convicted of crime. But the Socialists did not wait for conviction. They have ousted Haywood. There is, we are informed, to be a referendum for the election of officers in the Structural Iron Workers' Union, and we believe that the referendum cannot be too quickly held to give the Union an opportunity to free itself from the disgrace of having Ryan at the head of its organization.

Vicious Legislation Killed

One of the very last official acts of President Taft was one that did him great honor. It was the veto of the sundry civil appropriation bill, appropriating about $115,000,000 for various expenses of the government, and containing a provision, in the shape of a "rider", exempting from prosecution under the Sherman act labor unions and associations of farmers. President Taft very properly declared this provision to be class legislation of the most vicious sort. This veto, written as the clock was ticking the last minutes of the presidential term, will be remembered long after many events of that day, which were given much more space in the newspapers, have been forgotten. We trust President Wilson will prevent the enactment of this "rider" in the bill when it is again passed.

Truth and Abuse as Weapons

We have received the following letter from John A. Fitch, of the staff of *The Survey*, who has devoted much time and thought during the past few years to investigations of the steel industry:

EDITOR THE IRON TRADE REVIEW:—

My attention has just now been called to the editorial in your issue of Feb. 27, entitled "The Muckraker in the Steel Plant". I note that it takes exception to the publication in *The Survey* of Feb. 8 of a paragraph characterizing the 12-hour day in the steel mills taken from an article in the January *Metropolitan Magazine* by P. C. MacFarlane. The editorial complains that "in spite of the millions of dollars being expended annually for the improvement of conditions of employes, and in spite of willingness to spend much more, unjust descriptions of present conditions continue to be published." There may have been some "excuse of ignorance" for the man who wrote the article, but "as much cannot be said for *The Survey* . . . . . whose editors know the article is an outrageous exaggeration." Such unjust criticism, the editorial declares, tends to alienate manufacturers who are anxious to improve conditions when much good might be accomplished by reasoning together instead.

This dignified and evidently sincere protest from a journal of the high standing of yours deserves consideration both on account of its tone and because of its recognition of the fact that *The Survey* knows the facts with regard to the steel industry. It does leave something to be desired, to be sure, in the way of fairness, when at the same time with criticizing *The Survey* for its publication of unfavorable comments on the steel industry, it does not tell that in the very next issue, that of Feb. 15, *The Survey* published in full Col. Bope's address on the welfare work of the Steel Corporation, in line with the belief of its editors that all points of view should find expression. Possibly, however, your editorial was in type before the Feb. 15 issue of *The Survey* reached your office in Cleveland.

It is true that *The Survey* has never characterized the 12-hour day in exactly the terms chosen by Mr. MacFarlane. It would possibly be difficult for those of us who are familiar with the steel industry, even if we were endowed with Mr. MacFarlane's gifts, to write so vividly of it on account of our very familiarity. Conditions which inspire to quick and picturesque description do not continue to have the same power as one grows more familiar with them. It is a very well known fact that engineers and managers constantly in touch with conditions in industry are often entirely oblivious

to defects which the casual observer can instantly notice. It is not unreasonable to suggest that the editors of THE IRON TRADE REVIEW may be in too close touch with the steel industry to be constantly alive to the evils of certain conditions which prevail. This may be perfectly true without suggesting in any degree that they are lacking in humanitarian feeling. It is doubtful whether either the editors of your magazine or the officers of steel companies are in a position adequately to judge at any given time whether or not a description of the steel industry, devoted to other than its technical phases, is an accurate one.

Mr. MacFarlane characterized the 12-hour day as "barbaric", and he described the conditions that prevail in steel mills in picturesque language designed to make a reader who had never seen one understand why he spoke of it in that way. We, of *The Survey*, have never pretended that all of the work done in steel mills is done amid surroundings resembling an inferno. Neither have we attempted to convey the impression that unceasing toil through the 12 hours of the day is a common thing. On the contrary, we have pointed out that, especially in the positions where there is greatest heat, there are usually rest periods at intervals through the day.

But we do believe that the 12-hour day is exactly what Mr. MacFarlane called it—barbaric; and it is the more so in an industry where intense heat prevails and where the work is done at high pressure, as in the steel mills. Furthermore, we believe that Mr. MacFarlane used the right sort of language to make the strain of it on body and mind apparent.

It is difficult to overstate the evil that the regular working day of the steel industry is doing to many American communities. Neither is any promise held out that any of the larger steel companies intend to abandon the practice. On the other hand, there have been some particularly discouraging things in connection with the move for a shorter work day. Last fall THE IRON TRADE REVIEW editorially stated that because times were good, orders many and men scarce, that was no time to propose an eight-hour day. In other times, the argument is seriously proposed that an eight-hour day cannot be thought of, because it is not good for the morals of the men. A certain professional man closely identified with the welfare work in the steel mills of the United States declared last fall that if he could get an eight-hour day for the steel workers by turning over his hand, he would not do it.

It is true that the Fish Committee of Stockholders of the United States Steel Corporation reported against the 12-hour day and urged that steps be taken now looking to a reduction in working hours. It is understood that a sub-committee of the Finance Committee of the United States Steel Corporation has been asked to consider whether or not it may be practicable to establish an eight-hour day. The eight-hour day has been proven to be a success at Granite City, and the Carmbria company has put its blast furnaces on three shifts. These are encouraging signs. Still it is not known that any other company has any such plan even under consideration, nor has there come any intimation from the headquarters of the Steel Corporation that any action is likely to take place in the near future in line with the recommendations of the Fish Committee.

And yet *The Survey* believes that the eight-hour day in the steel industry will come for the very reason given by Mr. MacFarlane, that a 12-hour day is barbaric. Until it does come, however, *The Survey* will continue from time to time to point out what the practice of the steel companies in this regard is, and it will continue to describe the evil of that practice in the strongest terms of which its editors are capable. If at any time it finds its efforts in this direction strengthened by the arguments and appeals of others, it can do no other than welcome such assistance and utilize it to the full.

JOHN A. FITCH.

New York, March 4, 1913.

We believe that anyone who will turn to our issue of Feb. 27 and read the paragraphs which we quoted from Mr. MacFarlane's article and compare his sensational and untruthful statements with what Mr. Fitch himself says in his letter has been said by *The Survey* during the past few years will at once see the inconsistency of Mr. Fitch's position. We have not the slightest objection to picturesque language, if it draws the pictures correctly, but we do object to such language if it distorts the facts. Mr. Fitch says that *The Survey* has never pretended that all of the work done in steel mills is done amid surroundings resembling an inferno, yet that is the place Mr. MacFarlane describes if we grant that there could be a "menagerie of ponderous and awesome machinery" in an inferno. If the terrifying place that this sensational writer describes is not an inferno, what is it? Perhaps Mr. Fitch can tell us. He asserts that *The Survey* has pointed out that unceasing toil for 12 hours is not a common thing, and has shown that, especially in positions where there is the greatest heat, there are usually rest periods throughout the day. But what does Mr. MacFarlane say? He declares that there is "always the intense heat, always the presence of danger, always the spur of the speeding up system to keep you stumbling forward." Hence *The Survey*, by republishing Mr. MacFarlane's false statements, helped to circulate what it knew was not true. Mr. Fitch asserts that he believes that Mr. MacFarlane used the right sort of language to make the strain of the work on body and mind apparent. Making this assertion, Mr. Fitch puts himself in the class of the stump speaker who believes that in order to win votes he must villify his opponent and utter gross exaggerations. In the same class is also the sensational evangelist who believes that in order to save souls he must abuse and sentence to hell all those who do not agree with him. All of these people act upon the presumption that violent language will win men when the truth, no matter how vigorously stated, will not.

Mr. Fitch need not worry about the editors of THE IRON TRADE REVIEW being so closely in touch with the steel industry that it cannot appreciate existing evils. We have visited enough steel plants to know that Mr. MacFarlane's description does not correctly represent the facts as to conditions in such plants, but we have not become so familiar with these plants by constant association that we are not impressed by their dangers and other features that ought to be corrected. Much is being done to reduce the hardships of work in the mills. All reforms proceed very slowly up to a certain point, and then the cumulative affect of advocacy of reform brings about changes with surprising quickness, if the cause of justice and humanity will thereby be served. When mills are far behind in their deliveries and are doing their utmost to catch up, and when men are eager to earn as much as they can in a period of prosperity following a number of years when many were idle at least a part of the time, it is indeed difficult to reduce the hours of labor. The employes themselves would vigorously object. But as Acting Commissioner Hibbard, of the National Metal Trades Association, said in an address a few days ago, "Whether we like it or not, hours of labor will be shortened, wages will be increased and other conditions will be changed. We may not solve the labor problem, but employers and employes can at least learn to live peaceably together." Mr. Hibbard is right. There will always be controversies between the men who have labor to sell and those who wish to buy it, just as there are disagreements between sellers and buyers of pig iron. But there is no more reason why a worker in a steel plant should dynamite his employer's property than there is for a buyer of pig iron to dynamite a blast furnace.

Better days are coming and their coming will be hastened more by temperate reasoning together than by use of extravagant and abusive language. If any institution is "barbaric", let us not try to abolish it by acting like barbarians.

Steel Corporation Was Not Aggressive Enough

Gayley Says it Failed to Buy Ore Properties - Cole Declared the Policy Was Suicidal - Hearings in the Dissolution Case

The completion of the examination of James Gayley as a witness in the suit of the government for the dissolution of the United States Steel Corporation marks the end, it is now believed, of the hearings on the government side. The next step scheduled in the case is the questioning of numerous witnesses for the defense and this will be commenced after a recess of six or eight weeks, during which time the counsel for the Steel Corporation will prepare to present its evidence.

Mr. Gayley's examination, as was to be expected, had to do mainly with matters pertaining to Lake Superior ore properties and the policy pursued by the Carnegie Steel Co. and, later, the Steel Corporation, in acquiring such properties. The former, he said, never attempted to secure a monopoly of the commercially available ore in the Lake Superior district; its sole object was to secure control of sufficient ore properties to assure an adequate supply of the raw material for its blast furnaces. The Steel Corporation, in Mr. Gayley's opinion, was not nearly aggressive enough in enlarging its ore reserves; time after time, the finance committee refused to purchase valuable ore properties which the raw material department of the Corporation had endorsed. Mr. Gayley, in fact, was often greatly disappointed at this attitude of the finance committee, as he considered that a 50 years' ore reserve was absolutely essential for a concern having so much capital invested as has the Steel Corporation. At no time, he said, did the Corporation have a supply sufficient to last for more than 30 or 35 years. Mr. Gayley's testimony proved very favorable to the defense.

James Gayley, whose previous testimony was reported in last week's issue of THE IRON TRADE REVIEW, was recalled to the witness stand on Wednesday afternoon and questioned regarding a number of passages in the book of minutes of the board of the Carnegie Steel Co. The first was the account of a meeting held on July 18, 1898, in which Henry W. Oliver recommended that the Carnegie Steel Co. enter into an agreement with the Federal Steel Co., owner of the Duluth & Iron Range railroad, providing for a rebate of 30 cents per ton on ore transported from the mines at Ely on the Vermillion range to Lake Superior docks. At that time the regular freight rate on ore from the Ely mines to Lake Superior was $1 per ton, and from the Tower district, 90 cents. This agreement, said Mr. Gayley, was entered into two years after the date of Mr. Oliver's report. Judge Dickinson then tried to get the witness to state that the rebates, following the signing of the agreement, were actually collected by the Carnegie Steel Co. This, however, Mr. Gayley did not know. All he could state positively, he said, was that the agreement had been entered into; he believed, however, that the rebates were collected as the Carnegie Steel Co. always saw to it that its contracts were lived up to to the letter. The agreement, said Mr. Gayley, applied only to the mines at Ely.

Judge Dickinson then read an extract from the Carnegie book of minutes of a report by Mr. Gayley, dated July, 1900, on the terms and workings of this agreement. The attorney wanted to know what Mr. Gayley meant when he stated in the report that the agreement was so arranged as to avoid the outward appearance of getting rebates. The witness, however, said he did not remember the agreement clearly enough to express an opinion at this date as to its terms.

Judge Dickinson then endeavored to have Mr. Gayley state that by 1900 all the commercially available ore in the Lake Superior regions had been taken up and that no further desirable property was obtainable. The witness, however, said that he believed conditions in 1900 to be quite otherwise. He assured Judge Dickinson that anybody could have gone up to the Lake Superior district around 1900 and purchased all the good ore property he cared to. Plenty of it was available. The attorney wanted to know if the witness could remember the names and locations of any ore properties which were on the market in 1900. This information Mr. Gayley could not supply, but he suggested that the files and records of the Oliver Iron Mining Co. be consulted for this data.

The Phosphorus Limit

The witness was asked to state the ratio of phosphorus to the iron content in Bessemer ore.

"In Bessemer ore," said Mr. Gayley, "the percentage of phosphorus divided by the percentage of iron should not exceed 0.08."

"You once told Judge Gary, during the time you were first vice president of the Steel Corporation, that you then controlled about 70 per cent of the Bessemer and non-Bessemer old range ores, and 90 per per cent of the Bessemer on the old range," said Judge Dickinson. "Were those figures correct?"

"I presume that I based them on the information I had at the time," said Mr. Gayley, drily.

George W. Murray, personal counsel for John D. Rockefeller, was called to the stand for a few minutes and asked to produce some documents which he had secured from Mr. Rockefeller's files. One of them was a lease in which the Mountain Iron Co. leased two mines to the Oliver Mining Co. It was signed by John G. A. Leishman, then president of the Carnegie Steel Co., and by Henry W. Oliver, and was dated in 1896. Another was an agreement between the Oliver Mining Co. and the Bessemer Steamship Co., also dated in 1896. The third was addressed to J. P. Morgan & Co. and John D. Rockefeller, and signed by Henry C. Frick. It was dated in 1901.

When Mr. Gayley resumed the stand on Thursday, Judge Dickinson first took up the properties of the Sharon and Union Steel companies in the Lake Superior iron ore district. These, said Mr. Gayley, included the Donora and Penobscot mines which were acquired some time after 1900. These mines later passed into the possession of the Steel Corporation. The at-

torney wanted to know if it were true that at a meeting of the executive committee of the Steel Corporation in 1902, at which Judge Gary, Mr. Gayley and others were present, a suggestion had been made by the witness that the Champion iron mine be purchased in order that it might not pass into the possession of the Sharon company. Mr. Gayley did not recollect having made this specific recommendation, but he said he thought the minutes filed in the government exhibits were correct.

Owned Many Mines

Counsel then asked some questions concerning the Chemung Iron Co. This, said Mr. Gayley, owned the Palmer, Myers, Niles, Pettit, Monroe, Possum Lake, Weed, Vivian and other mines, controlling in all about 50,000,000 to 60,000,000 tons of good ore, which, however, averaged two to three per cent less in iron content than the average. Of this company, Chester A. Congdon and Henry W. Oliver were the heaviest stockholders. The Chemung Iron Co. was taken over by the Steel Corporation on a royalty basis of 50 cents per ton.

The Canisteo ore properties, at the time the Steel Corporation acquired them, were estimated to contain 40,000,000 tons of ore, said Mr. Gayley. This, however, was low grade and required a great deal of concentrating, thus making only about two-thirds of that amount really merchantable ore. The royalty on this ore paid by the Corporation was 37½ cents per ton.

"Do you know of any instance, prior to April 1, 1901," asked Judge Dickinson, "in which a bonus of more than five cents per ton was paid on the acquisition of any Mesabi ore property which held as much as 5,000,000 tons?"

"I do not recall any," said Mr. Gayley after thinking a while.

Judge Dickinson then asked the same question in regard to properties containing 4,000,000 tons, 3,000,000 tons, etc., respectively, but Mr. Gayley could recollect no transaction in which the bonus had been more than 5 cents per ton. Mr. Gayley was asked the same question in regard to old range ores.

Brought Bonuses

The Queen group of mines, or at least a portion of them, he said, brought a bonus of $250,000. The property involved was known by actual drillings to contain 200,000 tons of ore and it was estimated that if the ore lay as was indicated it would contain more than 1,000,000 tons. Mr. Gayley could recall no other instances, however, in which the acquisition of old range ore properties was accompanied by the payment of a bonus representing more than 5 cents per ton of ore in the ground.

"Did you ever know W. B. Treat, of the Lake Superior Iron Ore Association?" asked Judge Dickinson.

"I did not."

"Did you know William G. Mather?"

"Very well," replied Mr. Gayley.

"Was he a member of the Lake Superior Iron Ore Association?"

"I never heard of that association, Judge," said Mr. Gayley.

"Well, did you ever hear of an ore association out in Cleveland?"

"I knew of the Bessemer Ore Association."

"Was W. G. Mather a member of that?"

"Yes. He was once its president."

"Was Samuel Mather also in it?"

"Yes. Almost all the ore selling companies out there were in it."

"Did you ever attend any of the Bessemer Ore Association's meetings?"

"Only two of them, in Cleveland, in the early part of 1904."

"Did you attend for any other reason than to inform yourself of the ore situation?"

"I was always informed regarding the ore situation," said Mr. Gayley drily. "I attended these meetings to discuss with them a proposition advanced by the association that the Steel Corporation buy 1,250,000 tons of ore from merchant mining companies. The Bessemer Ore Association was greatly exercised over the ore situation and thought that this sale to the Steel Corporation would help to bolster up conditions. The Corporation, however, refused to hold its bag open to the extent of 1,250,000 tons."

"What else transpired at these meetings?"

"We talked over the situation. The ore people were in a very depressed and pessimistic state of mind and wanted counsel as to what action to take."

Advised Not to Cut

"Did you advise them?"

"Yes, I counseled them not to reduce the price then prevailing which, I believe, was above $5. My idea was that my optimism and their pessimism would bring about a sort of compromise, resulting in the establishment of a fair price, say $4 or $4.50."

"What did acually result?"

"They cut the prevailing price in half, if I remember correctly. Corrigan, McKinney & Co., in fact, announced that they would take business at whatever price they felt like quoting, and I believe they did it, too. The situation was entirely disorganized and nothing like it had been seen in ore circles in 10 years previous."

"Would the establishment of the 'fair price' you mentioned have had any effect on the prices of steel and pig iron?"

"Yes, it would have reduced them."

"Was the object of the association to keep up the price on ore so as to keep iron and steel prices up?"

"Perhaps it was. That was what I had in mind in advising them."

"Did the Bessemer Ore Association's officials ever get into communication with you and keep you informed as to their actions even though you did not attend their meetings?"

"Yes they frequently used to get

Andrew Carnegie's "Inside" Methods

During the examination of James Gayley, Judge Dickinson read from the book of minutes of the Carnegie Steel Co., Ltd., a letter written by Andrew Carnegie under date of Feb. 17, 1899, in which Mr. Carnegie deemed it would be advisable for the Carnegie Steel Co. to purchase some pig iron in the outside market. This, he said, should be purchased not at the lowest prices obtainable, but at high prices in order to strengthen the market in pig iron and, consequently, steel. Mr. Carnegie's advice was that the initial purchase should be one of 5,000 tons and that other purchases should follow. He also suggested that these transactions be conducted with an air of secrecy in order to create the impression that the Carnegie company was buying more pig iron than it really was.

"Was it the policy of the Carnegie Steel Co. to buy pig iron from time to time in order to keep up the price of finished products?" asked Judge Dickinson.

"No," replied Mr. Gayley. "That was done only at certain unusual times. The instance just alluded to is the only time I can remember when purchases of this kind were made."

into conversation with me by means of the telephone, but they did this for the purpose of asking advise more than for any other reason."

"Did you ever advise them before the Steel Corporation was organized?"

Advised Them Before

"Yes, they frequently telephoned me in 1900, which was a year of very high ore prices. The discussion then was as to the question of bringing down ore, but I forget the details now."

"You stated that you attended two meetings of the association in Cleveland. Did you ever attend one which was held in your office in the Empire building in New York, in 1904, and at which, besides the various Cleveland ore companies, W. P. Snyder & Co., the Republic Iron & Steel Co., the Cambria Steel Co. and the Steel Corporation were represented, the discussion relating to what action should be taken regarding the prices on ore?"

"I do not recollect having attended any such meeting," said Mr. Gayley.

"You attended it for five hours according to the record and now you do not recollect it?"

"I am unable to recall the meeting."

"Did the Steel Corporation ever have an agreement or understanding that it would keep out of the outside ore market and that it could bring down as much ore for its own uses as it wanted to?"

"That was always our understanding."

"Did the Corporation ever sell any of its ore to outside customers?"

"Yes, but only at the beginning, when the customers of the ore companies we acquired were sold the ore that they had contracted for. We had to supply ore to them for a while to keep from working a hardship on them. That was the only time we sold ore to other concerns."

An extract from one of the records filed in the government exhibits was read by Judge Dickinson. This told of a report which Mr. Gayley made to the officers and directors of the Oliver Iron Mining Co. on Nov. 28, 1899, when he informed them that the price of ore for the following year had been practically fixed at an advance of $2 a year. Mr. Gayley could not recollect the details of this report as made at that time, nor could he remember how the price of ore had been fixed.

Counsel read an extract referring to an agreement made between the Bessemer Ore Association and Mr. Gayley for the Carnegie Steel Co. in 1900 regarding the sale of ore for that year. Mr. Gayley's memory, however, was hazy regarding this. He said he remembered the agreement was talked of but he couldn't remember that it got past the "talking" stage.

Judge Dickinson read another extract from the book of minutes of the board of managers of the Carnegie Steel Co. in which C. M. Schwab was quoted as saying in one of the meetings in 1900: "I think the valley people will agree to blow out a number of their furnaces."

"Did the valley furnaces blow out?" asked Judge Dickinson.

"I do not know," said Mr. Gayley.

"Were these furnaces in the Bessemer Pig Iron Association?"

"Pursuing a Suicidal Policy"

Mr. Gayley told about a dinner, held by the officials of the Steel Corporation and its subsidiary companies in 1905 or 1906, at which Thomas F. Cole, then president of the Oliver Iron Mining Co., being asked to make a speech, arose and said that the Corporation was pursuing a suicidal course on the Mesabi range, letting property after property slip by. The Oliver Iron Mining Co., Mr. Cole said, at that time, would investigate choice properties and obtain terms for them only to be turned down by the finance committee of the Corporation. This policy, Mr. Cole believed, would result in great harm to the Corporation in the end.

"They were represented in the association."

Mr. Gayley was asked if he remembered any trading of ore for pig iron by the Carnegie Steel Co. He replied that he did not.

Judge Dickinson then asked the witness about the plans which the Carnegie Steel Co. had under consideration in 1900 for the construction of a wire plant and a tube mill at Conneaut Harbor. These plans, said Mr. Gayley, almost reached realization, since the Carnegie Steel Co. had already secured the site and actual work would have been begun very shortly.

In 1900, according to an extract from the book of minutes read by Judge Dickinson, the Carnegie Steel Co. was greatly dissatisfied with the advance in railroad freight rates and resolved to make a change in its connecting railroad service to its plants in the Pittsburgh district.

"What was done?" asked Judge Dickinson.

"I do not remember," said Mr. Gayley.

Counsel asked Mr. Gayley for the details of a railroad freight rate agreement entered into by the Carnegie Steel Co. in 1901, but this Mr. Gayley could not recall.

Judge Dickinson read some further extracts from the book of minutes of the Carnegie Steel Co. board of managers. These were from reports showing the rail tonnage produced at the Cambria, Illinois and Colorado plant each month.

"Did you make an examination of the properties of the Tennessee Coal, Iron & Railroad Co. prior to the time it was acquired by the Steel Corporation?" asked Judge Dickinson.

"I did not," replied the witness.

"Were you acquainted with the extent of its holdings?"

Opinion From Reports

"Yes, I had formed a pretty good idea of them from some reports I read."

"Did you not at one time make a recommendation to H. C. Frick that the Tennessee company be taken over in order that the Corporation might have the control of its raw materials?"

"Yes, that was about a year before the acquisition," said Mr. Gayley.

Judge Dickinson then wanted to know if the Bessemer Pig Iron Association was the only pig iron association of its kind Mr. Gayley knew of. The witness could remember of the existence of no other. He said that he made two or three purchases of pig iron from J. G. Butler Jr., of the association, for the Carnegie Steel Co.

Judge Dickinson endeavored, with little success, to have Mr. Gayley admit that the Steel Corporation made every effort to increase its ore holdings on the ranges.

"Time after time properties which had received the endorsement of the raw material department of the Corporation were acted upon unfavorably by the finance committee. In fact," said Mr. Gayley, "the president of the Oliver Iron Mining Co. informed me that owing to the refusal of the finance committee to purchase the properties for which he had conducted negotiations, his company was getting in wrong on the Mesabi range."

Attorney C. A. Severance thereupon took up the cross-examination of Mr. Gayley. He first questioned him as to his various connections prior to 1901. From 1885 to 1892, said Mr.

Gayley, he was in charge of the blast furnaces at the Edgar Thomson plant. In 1892 he became general manager at that plant and continued in this connection until in 1896, when he was transferred to the general offices of the Carnegie Steel Co., in Pittsburgh, assuming charge of all matters pertaining to the raw material department of the company. In this capacity he supervised the mining in the Lake Superior region, the ore docks at Conneaut and other points, the operation of the Bessemer railroad, of the ore steamships, etc. This part of the examination was devoted by Mr. Severance to establishing the witness' status as an expert.

Mr. Severance questioned Mr. Gayley about the Bessemer Pig Iron Association and how he conducted transactions through its representative, J. G. Butler Jr.

"All the merchant furnaces in the valley," said Mr. Gayley, "instead of maintaining separate selling forces, and going to other expense, saved this trouble by having Mr. Butler act for them as a sort of clearing-house for all orders. The organization was similar to that of the fruit growers in the west who maintain a common selling agent."

"Did prices of pig iron fluctuate or did the association keep them from varying widely?" asked Mr. Severance.

"Pig iron prices always fluctuate and always did," said the witness.

The attorney questioned Mr. Gayley as to what costs were included in the 80-cent freight rate on ore from the Mesabi range to Lake Superior. These included, said Mr. Gayley, not only the hauling of the cars, but the maintenance of huge ore docks, the storing of large amounts of ore in the docks, as well as in cars, etc. The Duluth & Iron Range railroad, he said, goes through a very hilly country. The Duluth, Missabe & Northern right of way runs for many miles through a muskeag swamp, the rest of the route being through a hilly section.

As to Traffic Agreement.

The traffic agreement providing for a 60-cent rate from the mines at Ely to Lake Superior ports, entered into in 1900 by the Carnegie company and the Federal Steel Co. was next taken up by Mr. Severance, who sought to take the sting out of the testimony the government had previously elicited from Mr. Gayley. Mr. Gayley admitted that the Minnesota Iron Co. and the Oliver Iron Mining Co. were the only shippers from Ely and hence, as the Minnesota company was controlled by the Federal Steel Co., there was no discrimination against any other concerns as a result of this contract.

Mr. Gayley said that he always believed that the Corporation should be supplied with an ore reserve sufficient to last for 50 years, but that he was unsuccessful in his attempts to have the finance committee purchase such a quantity of ore. The result was that the ore properties which were offered for sale to the Corporation generally passed into the hands of its competitors, the Jones & Laughlin, Lackawanna and Cambria Steel companies. Among the properties which were offered to the Corporation, but were rejected, Mr. Gayley remembered the following: 5,000,000 tons on the Vermillion range, offered by a Mr. Standish; the Grace mine; the Onondaga mine, offered by C. A. Congdon; properties offered by the Winifred Iron Co., Kinney & Hawkins, R. B. Whiteside, Dr. Rood and a great many others.

Had No Monopoly Idea

"Did you ever recommend that ore properties be taken over with a view toward securing a monopoly of the available ore land for the Corporation?" asked Mr. Severance.

"The idea of a monopoly never entered my head," said Mr. Gayley. "I was interested only in protecting the Corporation by providing it with an ample supply of ore."

Mr. Severance then elicited from Mr. Gayley some testimony to disprove the government's allegation that because of the Steel Corporation's monopoly in raw materials at the time the suit was filed, it would have been impossible for any new concern to engage in the steel business on a large scale.

"On Jan. 1, 1909, when you retired as vice president of the Steel Corporation, Mr. Gayley, were there sources of raw material available which were ample enough to justify the expenditure of large sums of money in establishing a new steel company?"

"There were," the witness replied with conviction. "For any new steel plant which might have been erected on the Atlantic seaboard, coking coal from Pennsylvania and West Virginia was available. Ore in unlimited quantities could have been obtained from Nova Scotia, Cuba, Brazil and from the Adirondack mountains. The Adirondack deposits in New York are very large and rich and have barely been scratched as yet. In Brazil the ore is so rich that the only ore to compare with it in the Lake Superior district is that from the Minnesota mine on the Vermillion range. Engineers whom I sent down to Brazil estimated the deposits there to contain over 1,000,000,000 tons of ore, with the possibility of further deposits being located.

"In case a new steel plant had been established on the Great Lakes in the early part of 1909, it could have availed itself of ores from the western Mesabi and the Cuyuna ranges, from the Baraboo district in Wisconsin and from the Witherbee-Sherman mines in northern New York. The latter contain the richest ore in the world.

"A steel plant in southern Utah could have availed itself of several hundred millions of tons of ore and large deposits of coking coal right on the spot. There are large deposits of ore in California and any projected steel plants there could obtain their coking coal in the future by means of the Panama canal. There are also great deposits of ore in Texas and a steel plant there could obtain its coking coal from Alabama."

Mr. Gayley stated that it never was a part of the Corporation's policy to buy pig iron from time to time in order to sustain market prices. At a meeting of the executive committee in 1903, a proposal to buy pig iron for this purpose was opposed by Judge Gary and it was decided that thereafter the Corporation would purchase only as much iron as it needed, without regard to the effect on prices.

Monday's Testimony

When Mr. Gayley took the stand on Monday for further cross examination, he was first questioned as to his knowledge of the iron ores of Cuba. The ores from the south of the island, he said, are as rich in their natural condition as the coarse ores from the old ranges of the Lake Superior district. The ore from the north of Cuba, however, is lean and must be sintered and dried before it leaves the island. On both the north and south coast, the ore lies very near the water, thus simplifying the problem of getting it to market. The Pennsylvania Steel Co., said Mr. Gayley, uses ore from both the south and north coasts, while the Bethlehem Steel Co. is bringing in the coarser ore. The witness was asked some further questions regarding ore deposits. Venezuela and Mexico, he said, both have enormous iron ore lands.

"You testified previously that about a year prior to the taking over of the Tennessee Coal, Iron & Railroad Co. by the Steel Corporation you suggested to Mr. Frick the advisability

of such a step in order that the Steel Corporation might secure control of the Tennessee company's raw material supplies," said Mr. Severance. "Will you kindly tell us the details of the conversation you had with Mr. Frick?"

"I casually met Mr. Frick one day in the corridor of 71 Broadway and we chatted a while about various topics, coming finally to the subject of iron ore. Shortly before that, I had heard an authentic report on the extent of the Tennessee company's properties and this I discussed with Mr. Frick. I suggested that the acquisition of that company be taken under consideration and I told him I thought it would be well for the Corporation to secure the raw material supplies which it would in this manner acquire."

"What was Mr. Frick's reply to your suggestion?"

"Mr. Frick said to me that he was not at all interested in the Tennessee company, as he thought the Steel Corporation would be unable to purchase it at such a price as it would care to pay."

"From whom did you get the information which you had in mind when you made your suggestion to Mr. Frick?"

Talked With Witherbee

"From Frank S. Witherbee, of Witherbee, Sherman & Co., a director in the Tennessee company. At that time, it was proposed to merge certain southern steel companies, and, in order to make a correct inventory of its assets, the Tennessee company had engaged three experts, Charles P. Perin, Julian Kennedy and one other engineer, to examine its ore, coal and limestone properties. It was in regard to the details of the report of these engineers that Mr. Witherbee informed me."

"Did Mr. Witherbee give you this information with a view to interesting the Corporation in the Tennessee company?"

"Oh, no. We were taking luncheon together and he told me of this report, as he knew I was interested in getting this kind of information. At the same time, he told me of large ore reserves in Sweden."

"Were you consulted about the Tennessee company's properties at the time negotiations were pending for the acquisition of that concern by the Steel Corporation?"

"Yes. Judge Gary called me into his office and told me that in order to prevent a financial demoralization, it was necessary for the Steel Corporation to purchase the securities of the Tennessee company. He wanted me to tell him what I knew regarding the properties of that concern. I repeated to him what Mr. Witherbee had told me."

"In the meantime had you taken any steps to verify Mr. Witherbee's statements?"

"No, I accepted his statement as fact."

"Had Judge Gary or any one else said anything to you in the meantime to give you the idea that the Steel Corporation was seeking to secure control of the Tennessee company?"

"No, the first that I heard about the taking over of the Tennessee company was just a few days before the transaction was completed."

"The Tennessee company's ores were of a low grade, were they not?"

"Yes.

The Hill Ore Lease

Mr. Gayley was questioned about the Hill ore lease. This, he said, involved, according to estimates of the Oliver Iron Mining Co.'s engineers, about 150,000,000 tons.

"Why did you advocate the signing of this lease?" asked Mr. Severance.

"I thought it would be advisable to increase the Corporation's ore holdings by this amount."

"What was your opinion of the terms of the lease which increased the royalties year by year?"

"Assuming that our estimate of the amount of ore involved was correct," said Mr. Gayley, "I believe that we would exhaust the properties long before the rates of royalty would become excessive. Furthermore, I felt that, taking into consideration the other ore holdings of the Corporation, the royalties would average only a few cents higher, at least not enough to make any material difference."

Following the signing of the Hill ore lease, said Mr. Gayley, the Steel Corporation experimented for a year or two to determine the best method of washing the sandy ore, of which a great deal was embraced in the Hill lease. The result was the large washing plant at Colerain, which cost about $1,000,000, and which made it possible to make usable large tonnages of ore which otherwise must have been left in the ground.

Mr. Gayley told how the Carnegie Steel Co. enlarged its capacity at different times by discovering new uses for steel. It built the first steel car, which was operated on the Bessemer & Lake Erie railroad. This industry has now grown to huge proportions. It also developed the manufacture of structural steel for use in steel frame buildings.

The interest of the Carnegie Steel Co., said Mr. Gayley, was always keenest in times of depression in this country. The customers developed at such times, however, had to be supplied in times of prosperity as well. In this manner, he said, the Carnegie Steel Co. developed a considerable export trade.

Mr. Gayley related some of the details concerning the taking over of the Amalgamated, Sharon and Union Steel companies by the Steel Corporation.

" I met Judge Reed, of Pittsburgh, at the Union League Club here in New York and he informed me that Mr. Frick wanted to see me. The latter, who was interested in the Union Steel Co., proposed that the Union-Sharon property be disposed of to the Corporation and he talked about what he thought would be a fair price. We had a talk that lasted about 15 minutes. I then went downtown and reported the conversation to Mr. Perkins, chairman of the finance committee, and Judge Gary. Later, several officers of the Steel Corporation, including members of the finance committee, went to Sharon to meet Mr. Donner, president of the Union Steel Co. They claimed more ore reserves at first than we would allow, and we found that this was due to the fact that they had estimated the boundaries of the ore lands at 100 feet out from the outside drill holes, whereas our engineers allowed only 50 feet as a fair measure of the contents of the mines."

Traffic Agreement

"Did you favor this acquisition?"

"I favored anything that brought the Corporation more ore, as I believed we were short on our supply."

The traffic agreement between the Federal Steel Co. on the one hand, and the Carnegie Steel Co. and the Oliver & Snyder Steel Co. on the other, providing for a rebate of 30 cents per ton on ore shipped from Ely to Lake Superior ports, was next taken up. An extract taken from the Carnegie minutes at about that time, contained a statement by Mr. Gayley, in which the latter stated that the Federal Steel Co. owed about $200,000 on accumulated rebate which it had not paid. "Judge Gary, of the Federal," said Mr. Gayley, "at the time, wants us to make a new agreement which will provide a means of paying this amount and future rebates in such a manner as to avoid the appearance of rebating."

MINING NEWS FROM THE IRON RANGES

Would Hold Up Lease

The fee owners of a valuable iron property near the Zimmerman mine in the Iron River district of the Menominee range are seeking to have the lease held by the Verona Iron Co. set aside in a chancery suit argued before Judge R. C. Flannigan in circuit court of Marquette. The complainants are Lorenzo A. DeGrasse, M. H. Moriarty and others. It is contended that the leasing company has violated an implied obligation to proceed within a reasonable time to develop the mineral resources of its holding. The defendant, on the other hand, asserts that it has but followed the general practice of mining concerns in handling deals of the kind. The Verona company is a subsidiary of Pickands, Mather & Co., of Cleveland.

The lease, which runs for a period of 50 years, was given in 1896. It provides for a ground rental, or minimum royalty, of $1,000 yearly, but contains no provision as to when mining operations shall be started. The defendant has met the minimum royalty requirements, and in 1909 conducted certain operations on the property, including the sinking of an exploratory shaft. The shaft is now full of water and there are no outward evidences of possession by the company, although the minimum payments have been faithfully made, and the defendant insists its rights have not been impaired.

It has been testified on behalf of the fee owners that they were led to understand the Verona company would proceed without loss of time to demonstrate the value of the property and put the tract on a producing basis. They contend that the company has not shown reasonable diligence in doing this and that by this failure an obligation under the lease has been violated. The Verona company offered as witnesses a number of the leading mining men of Upper Michigan to show that it has followed a frequent practice of mining concerns in dealing with lands held under leases similar to the one entered into in this particular proceeding.

Officials of the Oliver Iron Mining Co., which holds the lease to the Morris mine, near Hibbing, visited the property last week and it is understood that it was decided to ship ore from the pit this year. The Morris mine is located in sections 31 and 32, township 58, range 20, St. Louis county, Minn. It was first opened in 1905 and ships both Bessemer and non-Bessemer ores.

Mines to Open Early

Owing to the shortage of labor that is making itself felt on the Mesabi range this year, several of the mining companies are preparing to commence operations earlier than usual, getting the tracks in the pits in shape and doing other preliminary work in order to form a nucleus for an organization, so that by the time the shipping season opens they may have men enough to operate. In about a month there will be a fair number of men released from the timber camps, but it is not expected that there will be nearly enough for the requirements of the mining companies.

Will Install Electric Pump

After almost two years of inactivity, the pump in the Sand shaft at the Aragon mine, near Norway, Mich., is to be put in operation. This shaft was sunk merely to act as a seepage catcher for water that is above the ledge. The steam connections were cut off and the water allowed to rise in the shaft. It is now stated that the underground workings are becoming more wet in certain localities, and therefore, the steam line has been reconnected to pump out the shaft. When free of water, a new electric pump will be installed.

Highway Vacated

As was hoped by the majority of people concerned, an amicable adjustment has brought to a close the controversy at Negaunee, Marquette range, arising from the request of the Cleveland-Cliffs Iron Co. for the abandonment of part of the highway extending alongside the former cemetery and leading to the city's new burial grounds. The settlement has received judicial approval and the injunction restraining the municipal council from taking favorable action has been dissolved.

May Have Survey

If the Wisconsin legislature acts favorably on the bill recommended for passage by the joint committee on finance last week there will not only be a geological survey of the mineral resources of the state, but for the purpose of assessment and taxation, these lands will go on the rolls at a larger increased valuation. This move was taken in establishment of a new policy of taxing mineral lands as recommended in Gov. McGovern's last message and in furtherance of the recommendations made by members of the Wisconsin geological survey.

Under the plan suggested, the iron regions of the state are to be inspected and a geological map made of the mineralized sections. The information thus gathered is to serve as the basis of taxation valuations.

Sellers to Remain Idle

It is probable that the Sellers mine, at Hibbing, Mesabi range, operated by the Oliver Iron Mining Co., will not be a shipper this year. Early this winter, it was reported that the mine would re-enter the shipping list, but from present indications there is little likelihood of anything being done at this pit during the present season. An injunction still holds against this property and owing to this and the great shortage of labor here, it is probable that the Oliver Mining Co. will concentrate its efforts elsewhere.

Ships Ladder Rounds

The Oliver Iron Mining Co. is manufacturing ladder rounds at its Norway, Michigan, shop for its various properties on the old ranges. Over 30,000 rounds were made during the past year. They are shipped in sacks with 200 rounds to the sack.

Distributing Yards

The Winston & Dear Co., Minneapolis, which is mining the ore from the Susquehanna mine of Rogers-Brown Ore Co., at Hibbing, has started a second steam shovel working in the new distributing yards at the mine in preparation for the large tonnage that it is expected will be moved from the pit this year.

MEN OF THE IRON TRADE

A. C. Overholt, who retired March 1 as resident manager at Scottdale, Pa., of the United States Cast Iron Pipe & Foundry Co., was one of the organizers of the company that took over 14 pipe manufacturing concerns about 14 years ago, and is now a member of the board of directors, and a member of the executive board. In 1885, when the National Foundry & Pipe Works was founded, Mr. Overholt was elected secretary and treasurer; the late P. S. Loucks was chairman. Seven or eight years later, Mr. Overholt, in company with several other men, purchased the Charlotte Furnace Co., which then had a capacity of 25 tons a day. Mr. Overholt is vice president of the First National Bank, of Scottdale, a director of the Scottdale Savings & Trust Co., and is vice president of the Lincoln Coal & Coke Co. Until a few years ago, he was head of the A. C. Overholt & Co., which operated coke ovens at West Overton. This company abandoned operations when coal in that territory was exhausted. He attended school at Lafayette college, and is now a trustee of that institution.

W. R. Hill, who resigned as assistant resident manager, had been with the company a number of years. He was made assistant manager upon the death of his father, J. D. Hill, one of Mr. Overholt's business associates. The retiring assistant manager is a graduate of Lafayette college. Mr. Overholt was presented a loving cup, and Mr. Hill a watch a few days before their resignations took effect.

P. T. Laws has been appointed successor to Mr. Overholt. Mr. Laws is well known in the cast iron pipe industry. He has been resident manager of the company's plants at Addiston, O., Anniston and Birmingham, Ala.

W. H. Jackson, of the Des Moines Bridge & Iron Co., Pittsburgh, has gone to Panama on a business trip.

George G. Crawford, Birmingham, Ala., president of the Tennessee Coal, Iron & Railroad Co., has returned from a trip to Panama.

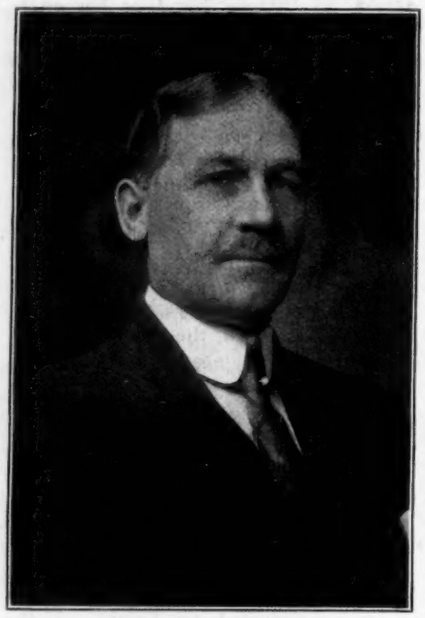
J. W. Hamilton, of Hamilton & Chambers, New York City, engineers and contractors, has gone to the West Indies on a general business mission.

H. H. Stambaugh, treasurer of the Brier Hill Steel Co., has returned to Youngstown, O., after a sojourn in North Carolina where he owns an estate.

M. M. Kohn, manager of the Multiple Unit Electric Co., 126 Liberty street, New York City, has left for Germany. He will return in about one month.

Wallace W. Scott, formerly connected with the Philadelphia sales office of the Carnegie Steel Co., has been transferred to the company's structural bureau at Pittsburgh.

William R. Reitzell, who has been in charge of the service department of the Riter-Conley Mfg. Co., at Leetsdale, Pa., has been assigned the additional duties of advertising manager.



A. C. OVERHOLT.

Capt. H. M. M. Richards, treasurer of the American Iron & Steel Mfg. Co., Lebanon, Pa., with his wife and daughter, has started for a trip to South America, Panama and the West Indies.

A. G. Page, connected with the H. C. Frick Coke Co., at Bitner, Pa., was presented a gold watch, last week, when he left the company to enter business for himself at Mount Pleasant, Pa.

E. O. Sessions announces that he retired March 1 as a member of the firm of Woodmansee, Davidson & Sessions, Chicago, consulting engineers. He is a fellow of the American Society of Electrical Engineers and the American Society of Mechanical Engineers, a member of the Illuminating Engineering Society and an associate member of the American Society of Civil Engineers.

W. S. Hildrup, secretary and treasurer of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., has been elected general manager of that company, and will have charge of sales and purchases.

P. J. Gordon, general superintendent of the mills and furnaces of the Republic Iron & Steel Co., arrived home last week from a trip to Thomas, Ala., where the Republic operates several Bessemer furnaces.

Herman Bacharach, mechanical engineer, until recently located at 722 Lewis block, Pittsburgh, has moved into larger quarter at 1009 Hartje building. He has enlarged the number of his specialties in scientific and industrial instruments.

Robert D. Hennen, civil engineer, and G. H. Hartley, civil and mining engineer, both of Morgantown, W. Va., have combined their offices under the firm name of the Monongahela Valley Engineering Co., which will do a general engineering business.

John T. Gardner, who has been with the operating department at the Ohio Works, Youngstown, O., of the Carnegie Steel Co., has been appointed superintendent of rolling mills of the Brier Hill Steel Co., that city. Mr. Gardner was formerly with the Illinois Steel Co.

S. P. Alpaugh has been elected a director of the Wheeling Sanitary Mfg. Co., Wheeling, W. Va. Other directors, all of whom were re-elected, include J. J. Holloway, B. W. Peterson, W. F. Stifel, J. E. Wright, F. W. Work, A. S. List, F. J. Park and A. A. Wheat.

J. E. McCauley, formerly sales agent for the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has been appointed assistant manager of works. He has been with the company about four years, and was previously identified with the Solid Steel Casting Co., the Baldwin Locomotive Works and the Standard Steel Works Co.

E. S. Alexander, formerly assistant to the general manager at Newport

MEN OF THE IRON TRADE

News, Va., of the Newport News Shipbuilding & Dry Dock Co., has been appointed district representative of that company in Philadelphia, with offices in the Harrison building. The appointment took effect March 1.

E. S. Carman has been appointed chief engineer of the molding machine department of the Osborn Mfg. Co., Cleveland. Mr. Carman has had a wide experience in engineering practice and has devoted several years to the design and development of molding machines. After completing his engineering course, Mr. Carman spent some time in practical machine shop work, which was followed by 10 years of engineering practice.

M. C. Byers, chief engineer of operation of the St. Louis & San Francisco, has been appointed assistant to the president of the Great Northern, effective March 1, with headquarters at St. Paul. The duties of chief engineer of operation will also be assumed by F. G. Jonah, chief engineer of construction.

Edward Beard has been elected president of the Norwalk Iron Works, Norwalk, Conn. Other officers elected are: Eben Hill Jr., secretary; Eben Hill Sr., treasurer and general manager. The following directors were chosen: Edward Beard, W. F. Bishop, Eben Hill Sr., Eben Hill Jr. and H. H. Mossman.

J. B. Orbison, who has been associated with the Mediator Co., Cleveland, for the past three years, has announced his resignation from that organization, effective March 1. He will devote himself to efficiency campaigns in industrial organizations and railroad shops, and will immediately assume the position of president and general manager of the Foundry Service Co., Cleveland.

Edgar T. Ward, after being engaged in the steel business in Boston for 30 years, on March 1 retired from active business and has withdrawn from the firm of Edgar T. Ward & Sons. John Ward and Edgar Ward have on March 1 formed a copartnership under the name of Edgar T. Ward's Sons and will continue the business as heretofore.

James A. Campbell was elected chairman of the board of the Continental Supply Co., a subsidiary of the Youngstown Sheet & Tube Co., at a recent meeting of the directors held in that city. Other officers elected include: W. E. Manning, president; W. H. Adams, vice president and treasurer; W. K. Hughes, second vice president; W. R. Wilkinson, secretary.

Henry M. Reed, general manager of the Lousiville, Ky., plant of the Standard Sanitary Mfg. Co., has been promoted to the position of assistant general manager of all the company's factories, with headquarters at the general offices in Pittsburgh. His successor in Louisville is Theodore Mueller, who has been Mr. Reed's assistant. The change was effective March 1.

E. S. CARMAN

William P. Bear has been appointed sales engineer of the Sprague Electric Co., Chicago office, the department, a new one, being created to provide complete electrical requirements for large buildings. Mr. Bear for some time handled industrial and power work for the Westinghouse Electric & Mfg. Co., in the Carolinas, and later acted in a similar capacity for the States Electric Co., Chicago.

T. H. Whitfield has opened offices at 1040 Wells building, Milwaukee, under the firm name of the Whitfield Power Equipment Co., and will make a specialty of engineering and installing dynamos, motors, engines and boilers. For the past 14 years he has been associated with the Northern Electrical Mfg. Co., Madison, Wis., and the Fort Wayne Electric Works, Fort Wayne, Ind., being the Milwaukee representative of those companies.

William C. Springer, assistant manager in charge of the night forces and production of the Milwaukee Solvay Coke Co. for many years, has resigned to accept the position of superintendent of the new coke works being established in connection with the mines and furnaces of the Northwestern Iron Co., at Mayville, Wis. Mr. Springer has already assumed the duties and is assisting in the construction of the coke ovens at Mayville.

F. William Bosch, who recently resigned his position in the steam turbine drafting department of the General Electric Co., Lynn, Mass., to become designing and consulting engineer for the Murray Iron Works Co., Burlington, Ia., will take up his new duties in August, following a trip to Germany, where, with Prof. Rossler, Mittercide, he will make a study of high-speed engines, giving especial attention to the Stumpf uniflow steam engine.

John Burns Jr., who for a number of years had charge of the purchasing department of Dodge Bros., of Detroit, has severed his connection with the above firm. He has associated himself with I. M. Jacobson & Sons, manufacturers, smelters, and dealers of all metals and alloys, general offices, 408 Ford building, Detroit, and will devote his entire time to their interests. I. M. Jacobson & Sons are now operating their new smelting works located at 70-72 Catherine street, Detroit.

W. E. Crouch was appointed assistant superintendent of the plate department of the Homestead works of the Carnegie Steel Co., March 1, under Supt. W. H. Packer. Other appointments were made as follows: W. M. Menk, assistant superintendent of the 32, 72, 84 and 140-inch mills; C. L. Flolr, assistant superintendent of the 30, 42 and 128-inch mills; C. P. Laird, assistant superintendent of the 48-inch mill; S. T. Paisley, superintendent of the 28 and 38-inch blooming mills, succeeding L. M. Haetzell, who resigned after eight years' service; E. Z. Crozer, assistant superintendent of the structural mill.

CONTINENTAL IRON AND STEEL MARKETS

BELGIAN IRON TRADE

Brussels, Feb. 20.—Very little change is to be reported in the position of the iron and steel trades, but the prevailing quietness is making some members become impatient, and irregularity in prices appears in the most susceptible branches. Thus a softening in export prices of sheets and plates must be noted, thin sheets being obtainable at 143s ($34.82) to 142s ($34.58), medium at 138s ($33.59) to 137s ($33.35), and plates at 133s ($32.37) to 132s ($32.13), f. o. b. Antwerp. This, however, appears to be the only weakness at the moment, bars at 120s ($29.21), rods at 130s ($31.64), girders at 115s ($27.99) and rails at 120s ($29.21) per ton being practically unaltered. Pig iron and half products are strong and in demand at previous quotations, and engineering shops are assured of being very busy for some time to come. At the same time, the constant recurrence of war rumors and now the threat of serious labor troubles in this country, are causing growing nervousness. Heavy supplies of Welsh coal have been laid in as a result.

DUTCH IRON TRADE

Amsterdam, Feb. 19.—While the iron trade of Holland does not cut a big figure in the world, progress has been steadily made where possible. The Association Co-óperative Zelandaise de Carbonisation is getting on well with the erection of the coke oven plant at Sluiskill for the supply of coke to a group of steel works. The initial installation is designed for a yearly output of 300,000 tons of coke, but the necessary space is reserved for doubling the production if required. At present two batteries of Coppee ovens of 40 units each, with by-product recovery plant, are completed, and of two other batteries of the same number of units, without recovery plant, one is being completed and the other will be finished during March. The discharge of the coal from the steamers is to be effected by two special apparatus designed to handle about 100 tons an hour, and four large silos of a total capacity of 30,000 tons have been erected for storing the coal. The company has also undertaken the construction of dwellings for workmen and clerks. The whole plant is expected to start operations in the course of April next.

GERMAN IRON TRADE

Berlin, Feb. 20.—An uneasy note is manifested in the iron trade of Germany. It is the most important trade of the country, and depends more than others on easy money conditions and freedom from political apprehension. Unfortunately, both these conditions have been absent for months, and no change in this respect appears in sight as yet. A slow curtailment of business seems to result, which the mills have so far made light of, owing to their old engagements, but the influence of which is beginning to tell in the shape of absence of new business, especially for export. The war, of course, is of benefit to certain firms like the Krupp establishment, but other branches are suffering. Iron ore is strong at the recent advance of 30 to 50 pfennig (7.05c-11c); pig iron continues to be turned out at a record rate, and still stocks have decreased 4,000 tons during January, and at 243,000 tons are just half of those of a year ago—not more than a few days' supply. Half-products are still in great request; steel bars continue unsettled by recent competitive developments in Berlin and Saxony, and are obtainable at 120 marks ($28.20) to 122 marks ($28.67) per ton. Hoop iron is beginning to feel the need of new orders. Plates are still under pressure, especially for ship building plates, and sheet mills are also sold for another month or so. Wire and wire products are unsettled by uncertainty about the renewal of the rolled wire syndicate, which seems somewhat doubtful. Meanwhile, buyers are operating from hand to mouth. Structural shapes are kept firm largely by export business, the building trade in this country continuing poor. Pipe works are doing well, and those in Upper Silesia have recently booked orders so freely that they talk of raising prices. Rolling stock and other engineering shops are assured of work to the end of the year.

AUSTRIAN IRON TRADE

Vienna, Feb. 19.—Contrary to fears entertained in industrial quarters, sales of iron and steel products in Austria in January exhibited, on the whole, an increase as compared with the corresponding period of last year. In the case of coarse sheets, sales declined by 18,951 hundredweights, to 45,082 hundredweights; but those of bars and shapes advanced by 407 hundredweights to 354,955 hundredweights, sales of joists increased 4,710 hundredweights to 123,677 hundredweights, and of rails 19,649 hundredweights, to 66,030 hundredweights.

RUSSIAN IRON TRADE

St. Petersburg, Feb. 19.—The pig iron famine from which Russia has been suffering generally over a lengthened period is felt with keen intensity among the iron manufacturers of the Moscow district. The Association of Manufacturers, after going into the question of the possibilities of supply from Russian sources, whether from the north (Urals) or from the south (Donetz basin) have come to the conclusion that a renewed admission into Russia of foreign pig iron, free of duty, becomes an urgent necessity unless the government can devise some other means for satisfying the demand in the Moscow area for crude iron. According to the statement of the association, the present consumption of the metallurgical factories of the Moscow district in crude iron may be estimated at about 9,000,000 to 10,000,000 poods per annum.

A statement based on information supplied by 34 of the largest metallurgical houses of the district shows that stocks are exceedingly low with all of them, and supplies come from the south (Donetz basin) very irregularly. The statement further shows that the increased production of these works during the past few years has been effected with extra supplies of crude iron from the Urals in the north and from abroad, and the works referred to as the basis of the statement, further make it known that unless special steps be taken to supply them with the requisite iron, they will all have to reduce their production by 12 to 15 per cent.

LATEST MACHINERY NEWS COLLECTED IN LEADING MANUFACTURING CENTERS

A summary of the machinery and machine tool market during the past week shows very little change from the few weeks immediately preceding. Manufacturers continue to be filling back orders, while dealers are looking up numerous inquiries for single tools and preparing for the spring rush of business that is expected early this year. The inauguration of a new administration at Washington appears, so far, to have had little, if any, effect upon the market.

In New York, the aggregate of machinery sales during the past week does not signify that there has been any important change. Miscellaneous business makes a fairly satisfactory showing. None of the railroads have appeared recently as large buyers in the market, but dealers are strongly inclined to look for considerable improvement from that source in the near future. Representatives of machine tool houses are informed that the Pennsylvania's list is being prepared and probably will be ready for distribution next month. Indications are favorable to definite action taking place in April on the Boston & Maine bids. The pending sales of the equipment of the E. R. Thomas Motor Car Co., which has been widely advertised among machine tool buyers, has affected the eastern market adversely. Most of the equipment is in very good order, it is said, and the sale, which is to take place March 17, has induced many prospective buyers to hold off and see what bargains can be secured. The entire plant equipment, amounting in value to $500,000, has been carefully catalogued, and the catalogues distributed to the number of 10,000 or more, extending into Canada and European countries. Bids have gone in on the Mead-Morrison list, which was put out late in February, covering the equipment for the boiler shop to be erected in East Boston. The General Electric Co. is inquiring for a small lot of machine tools for the Schenectady, N. Y., plant. There is a report current that the Lehigh & New England railroad has settled on Bath, Pa., as the location for its new shops. It is estimated that the company will spend about $150,000 on the improvement.

In Pittsburgh, a good volume of business continues to be enjoyed by machine tool builders and dealers, and a rather large number of interesting inquiries have been received by manufacturers of heavy mill equipment. Standard and locomotive cranes continue to be in good demand and several negotiations for cranes have been closed this week. The various railroads in that part of the country have been buying equipment and the leading iron and steel manufacturing interests are taking a prominent part in the buying movement.

In Chicago, there are no large lists pending and most railroad requirements have been covered. The most important new construction in prospect is the contemplated erection by the Big Four of extensive shops at Indianapolis, Ind. It is reported that the work on this project will be undertaken during the spring or summer. New construction is limited, due somewhat to adverse weather conditions. Generally, however, the tone of the market is very good and dealers are fairly busy with routine inquiries for single tools.

In Cleveland, the number of orders for machine tools closed last week was not as heavy as in some previous weeks of the present boom, but there is no slackening in the volume of inquiries before the dealers. The business closed consisted largely of single-tool lots, which aggregated, however, a good volume. Lathes and milling machines continue in good demand. It is expected that the large list of the central Ohio steam shovel interest, which has been before the trade for several weeks, will be closed shortly.

In Cincinnati, foreign business is a little in excess of domestic business. No large lists have been taken recently and it appears that those concerns that were expected to put out inquiries for a large number of tools are now buying only enough to supply their immediate requirements, until they can better judge the future of the machinery market. Three of the larger plants there are very busy in getting out back orders and are working night shifts whenever enough labor can be secured. The labor situation there has been rather discouraging for some time, as a number of the plants have been unable to get as many skilled workmen and even laborers as they would like to have. Lathes and milling machines are most in demand, while small electrical equipment is selling well, although not as much so as the latter part of last year. The general item of discussion in the market here at the present time is the proposed legislation now pending in the Ohio state legislature changing the laws radically in regard to hours of labor and other industrial conditions.

ALABAMA

BIRMINGHAM.—J. S. Purcell is president and P. M. Harper is secretary-treasurer of a company organized to manufacture a safety switch recently patented by J. M. Walker, Birmingham; $6,000.

ARKANSAS

FORT SMITH.—The Fort Smith Iron & Steel Co. has been incorporated; $50,000; by James W. Arnold, John W. Murray and John Vaughan.

HOT SPRINGS.—The Consumers' Gas Co. has been incorporated with a capital stock of $200,000; by W. Rayburne, president, and H. M. Trieber, secretary; C. P. Perry, treasurer.

HOT SPRINGS. — The Citizens' Electric Co. has been incorporated with a capital stock of $200,000 by C. Rayburne, president; H. M. Trieber, secretary; C. M. Perry, treasurer; and M. Wright and J. M. Moore.

HUTTIG. — The Louisiana & Pine Bluff Railway Co. recently received a new 56-ton engine from the Baldwin Works.

LITTLE ROCK.—The H. W. Johns-Manville Co., Milwaukee, Wis., is arranging to open a branch office at Little Rock.

LITTLE ROCK. — The Rumely Products Co., Laporte, Ind., is arranging to open a school for its salesmen at Little Rock.

COLORADO

DENVER. — The Denver Northwestern & Pacific Railway Co. is building a line from Steamboat Springs to Craig, a distance of 42 miles, which should be in operation by the latter part of this year. O. C. Anthony is purchasing agent.

CONNECTICUT

BRANFORD.—The Malleable Iron Fittings Co. is planning on addition to its annealing room.

BRIDGEPORT. — The Baltimore Armored Car & Equipment Co., manufacturer of automobile bodies, with factory at Bridgeport and offices at 258 Fifth avenue, New York City, has been placed in the hands of J. E. Hedges, as receiver, by the United States district court. The receiver is under a bond of $25,000, with instructions to continue the business for 60 days, and to issue receiver's certificates to the amount of $30,000 to carry on the business. The appointment was made on the application of three creditors, who claimed that the liabilities of the company amounted to $140,641, while its assets do not aggregate over $124,000.

HARTFORD.—The New London Ship & Engine Co. has been incorporated; $3,500,000; headquarters at Groton.

HARTFORD.—The Couch-Dean Corporation has been incorporated to manufacture dishwashing and laundry machinery; $100,000; by Elbert L. Couch, George Howard Dean.

HARTFORD.—The John F. Robertson Co., Pittsburgh, manufacturer's agent, has taken the account of the Roto Co., manufacturer of Roto-Turbine cleaners.

HARTFORD.—The E. R. Clark Co. has been incorporated to engage in the business of selling pumping plants and water supply systems; $50,000; by Eugene R. Clark, Alfred L. Bergman and Terry J. Chapin.

HARTFORD.—The Kelsey Motor Co. is completing its equipment by adding small amounts of machinery from time to time. When its plant is completely equipped, this company expects to build its own motor parts.

HARTFORD. — The Hartford Iron Works has been incorporated to manufacture ornamental iron trimmings, etc.; capital stock $50,000. The company has a foundry on Connecticut boulevard, East Hartford, and has been in business two or three years. The company was incorporated by Edward J. Manning, former manager of the Royal Typewriter Co., William A. Clinton and Francis P. Lyon. Clarence E. Whitney, president of the Whitney Mfg. Co., also has an interest in the company. Mr. Manning will take active charge of the business.

NEW BRITAIN.—The P. & F. Corbin Division of the American Hardware Corporation is negotiating for the purchase of the Sargent block on Park and Elm streets, now occupied by Louis Edekon. The company now occupies nearly all the other property on the north side of Park street from Elm street to the railroad.

NEW BRITAIN.—The Skinner Chuck Co., manufacturer of lathe, drill and planer chucks, contemplates an enlargement of its plant, although it has not yet determined on the character and size of the buildings. This company advises that it has enjoyed a very prosperous year.

NEW HAVEN.—The New Haven Trolley Supply Co. has been incorporated to manufacture car trimmings, car wheels, etc.; $10,000; by Arthur C. Stowe, Samuel P. Huntington, Howard C. Webb.

NEW HAVEN. — The Hoggson & Pettis Mfg. Co., whose plant was destroyed by fire in December, is occupying a portion of a large six-story factory building, and advises that it has more room and better facilities than ever before.

NEW LONDON.—The New York, New Haven & Hartford Railroad Co. is to erect a new steel bridge over the Thames river at New London at an estimated cost of about $4,000,000. The plan snow in process of preparation by the railroad engineers call for a four-track bridge, consisting of two double-track parallel spans. There will be five fixed spans, one of which will be 245 feet to 195 feet each. There will be one draw span, having a clear channel of 150 feet. The height of the structure above the bottom of the channel will be 140 feet.

NORWICH. — The Norwich & Westerly Traction Co. has placed an order with the Westinghouse Electric & Mfg. Co., Pittsburgh, for one quadruple equipment of motors.

SOUTHINGTON.—The Blakeslee Forging Co. has added four drop hammers to the equipment of its plant.

SOUTHINGTON.—The Beaton & Corbin Co. is erecting an addition to its plating department to provide for several more tubs.

WATERBURY.—The Chase Rolling Mill Co. will add to the electrical equipment of its mill at Waterville a 700-kilovolt-ampere Curtis turbo-generator and a 50-kilovolt-ampere motor-generator set, from the General Electric Co.

WILLIMATIC.—The Vanderman Mfg. Co. is running both its machine shops and foundry at full capacity, in order to meet a large volume of orders.

DELAWARE

WILMINGTON.—The Rail Joint Lock Co. has been incorporated; $100,000; by F. Giles, A. M. Leech, M. E. Dorsey, all of Wilmington.

WILMINGTON.—Formation of the American Road Machinery Co., a Delaware corporation, marks the union of the American Road Machinery Co., the Climax Road Machinery Co., Monarch Road Roller Co., and the Lima Contractors & Supply Co. The company has an authorized issue of $1,500,000 first mortgage sinking fund in 6 per cent gold bonds, due Feb. 1, 1938, of which $1,000,000, the entire amount outstanding, has been sold to Morris Imbrie & Co., New York City.

DISTRICT OF COLUMBIA

WASHINGTON. — The Herman Mfg. Co. has been incorporated under the laws of Delaware to erect workshops for all kinds of materials, hardware, etc.; $100,000; by John O'Connell, Philip G. Afflick, Joseph F. Howard, all of Washington.

WASHINGTON.—The United States treasury department, O. Wenderoth, supervising architect, advises that the construction and furnishing of equipment for the following post offices are open for sealed proposals: Casper, Wyoming, Lawrenceburg, Ky., Boonville, Mo., South Chicago, Ill., and Charleston, W. Va.

WASHINGTON. — Proposals will be received at the Bureau of Supplies and Accounts, navy department, until March 18, 1913, to furnish at the navy yard, Boston, Mass., a quantity of naval supplies, as follows: Sch. 5,219: Copper rivets and burrs, cast steel wire; Sch. 5,221: Bar iron and steel, etc. Applications for proposals should designate the schedules desired by number.

WASHINGTON.—Bids on three 60-, two 20-, and two 25-ton locomotive traveling cranes for the Panama canal will be opened March 26, by the Isthmian canal commission, Washington, D. C. On April 12, the Bureau of Yards and Docks of the Naval Department will open bids for 11 15-ton locomotive cranes with grab bucket equipment for Pearl Harbor, Hawaii, and the Puget Sound navy yard, Washington.

WASHINGTON.—Proposals for furnishing electric traveling cranes, steel rail, angle bars, track bolts, switches, track frogs, tie plates, track chisels, babbitt metal, steel wire, pipe fittings, valves, saws, hinges, tackle blocks, etc., will be received at the office of the general purchasing officer, Isthmian canal commission, until March 26. Blanks and general information relating to these requirements (Circular No. 764) may be obtained from F. C. Boggs, Major, Corps of Engineers, U. S. A., general purchasing officer.

GEORGIA

ALBANY.—The Albany Mill Supply Co., Inc., advises that it has increased its capital stock from $50,000 to $150,000, which may be taken as an indication of the extent to which that company's business has grown during the past few years. The company advises that it has secured some splendid contracts during the past few months and is anticipating a better business during the remainder of the current year.

ATLANTA.—The Empire Life is to build a 15-story office building costing $400,000 on Broad street, work to begin October 1.

COLUMBUS. — Announcement has been made that the plant of the Columbus Barrel Co., which was destroyed by fire recently, will be rebuilt at once.

JACKSONVILLE. — The Composite Brick Co. has been incorporated to manufacture brick products; $150,000.

ILLINOIS

BLOOMINGTON.—The Bloomington Canning Co. has certified to an increase of capital stock from $30,000 to $150,000 and its charter has been extended 50 years.

CHICAGO. — The Young Typewriter Co. has certified to an increase of capital stock from $3,000 to $14,100.

CHICAGO.—The Chicago & Alton Railroad Co. has increased the capacity of its outlying shops during the past six months.

CHICAGO.—The James S. Miller Co. has been incorporated to deal in railroad supply and scrap iron; $60,000; by Harry C. Strauss, James S. Miller, Alvin W. Wise.

CHICAGO.—The Egyptian Electric Co. has been incorporated with a capital of $25,000 to do a general electrical business. Address A. A. Rolf, 9 South La Salle street.

CHICAGO.—The Pacific Scale Works has been incorporated with a capital of $6,000 to manufacture, sell and operate scales and other mechanical devices. Address in care of Fred A. Bangs, 38 South Dearborn street.

CHICAGO. — The Economy Heater Co., previously reported, advises that operations will be begun in a couple of weeks, at which time the company will open offices in the Reaper building.

CHICAGO.—The Industrial Works of Bay City, Mich., manufacturer of cranes, pile drivers, transfer tables and grab buckets, has recently established a Chicago agency, in charge of Burton W. Mudge & Co., in the Peoples Gas building.

CHICAGO.—The R. I. Baureisen Co. has been incorporated at $10,000 to do a general engineering and contracting business. The company may be addressed, care Clayton W. Mogg, 140 South Dearborn street, Chicago.

CHICAGO.—A permit has been granted for the erection of a 12-story building at 269-275 South La Salle street, at a cost of $350,000. B. T. Greenebaum, 269 South La Salle street, is the owner, and A. S. Alchuler, 155 North Clark street, is the architect.

CHICAGO.—The Auto Combination Mfg.

Co. has been incorporated with a capital of $50,000, to manufacture and sell automobile supplies and equipment. The company has taken the second floor at 1467-9 Michigan avenue.

CHICAGO.—The Southern Concrete Product Co. has been incorporated with a capital of $20,000, to manufacture concrete products. Address George D. Kimball, care of the United Realization Co., 111 West Monroe street.

CHICAGO.—A permit has been granted for the erection of a one story brick addition to the plant of the Cole Mfg. Co., stove maker, at 3218 South Western avenue. The approximate cost of the building will be $6,000 and it will be used to house stamping presses. M. J. Morehouse, 343 South Dearborn street, is the architect.

CHICAGO.—H. W. Johns-Manville Co., manufacturer of asbestos, has practically closed a deal involving the purchase of 110 acres at Riverdale, Ill., for approxmately $75,000. The company advises that it intends practically to duplicate its Manville plant, involving an expenditure of about $12,000,000. It has not been decided definitely when construction work will begin.

CHICAGO.—The Girard Refrigeration System, the incorporation of which was reported in a previous issue, has opened temporary offices at 66 West Lake street. A. C. Girard, the inventor of the process, is the head of the company. The company's authorized capital stock is $250,000. At present, manufacturing operations are confined to assembling, but the company expects to build a plant at a later date.

CHICAGO.—The Chicago Electrical Castings Co. has been incorporated with a capital of $11,000 to make electric steel castings. The company has equipped a plant at Kedzie avenue and Thirty-first street, installing an electrical furnace for steel making and other modern equipment. Matthew Finn, of Detroit, is president and Wilton Bentley, formerly of the Bentley-Synder Co., is in active charge. The company expects to start operation some time next week.

CHICAGO.—The Taylor-Wharton Iron & Steel Co., High Bridge, N. J., advises that H. A. Johann and Martin O'Shaughnessy, who have been in charge of the Chicago and middle west territory for sometime, have resigned, effective March 31, to engage in other business and that the Chicago office of this company, beginning April 1, will be in charge of George R. Lyman and J. R. Bolgiano, with Guy H. Bergen representing the company in the Messabe Range district.

DECATUR.—The Dawson Automobile Co. has been incorporated; $10,000; by Earle M. Dawson, Charles E. Dawson, Florence L. Dawson.

EAST MOLINE.—Deere & Co., agricultural implement manufacturers, recently purchased 28 acres of ground in East Moline, on which will be erected two foundry buildings, two stories, 600 feet long. Work on the proposed structures will begin early in the spring.

LEWISTOWN. — The Lewistown Electric Light Co. has certified to an increase in its capital stock from $500 to $50,000.

MATTOON.—The Mattoon Broom Corn Harvester Co. has been incorporated; $50,000; Daniel F. Sutton, Joel B. McDavid, John W. Sutton.

MOLINE.—The Moline Scale Factory advises that it expects to build a new core room and mill room 40 x 130 feet, and an adddition to its present foundry, 80 x 60 feet. The company just recently began to occupy a new addition, 70 x 170 feet, two stories.

INDIANA

ALBION.—J. C. Kennell, auditor of Noble county, opened bids March 5, for the construction of 19 new bridges and for several repair jobs, plans for which are on file at his office.

ANDERSON.—The Hill Machine Co. has an order for a pump to be delivered at Monterey, Mexico.

BLOOMINGTON.—The Oolitic Stone Mills Co. has been granted an increase in capital of $20,000.

DUGGER.—The Automatic Trowel & Tool Co. has been incorporated to manufacture and sell plasterers' tools; $10,000; by N. W. Ringo, Charles Mason, Ada Ringo.

EAST CHICAGO.—The Locomotive Superheater Co., incorporated under Delaware laws, total capital $2,500,000, will have $20,000 represented in Indiana; by W. Schmidt, S. Hoffman, G. L. Bourne.

EVANSVILLE.—The L. H. Swanson Co. has the contract for the installation of a $4,000 lighting plant at Corydon, Ky.

EVANSVILLE.—The Reliance Foundry Co. advises that business has been such that its entire capacity is contracted for a full year. The company contemplates increasing its capital and moving into larger quarters as soon as satisfactory arrangements can be made.

FORT WAYNE.—The Fort Wayne Rolling Mill Co. is adding two single sand bottom furnaces and one waste heat boiler connected with same to its puddle mill.

GARY.—The Gary Heat, Light & Water Co. has increased its capital stock from $100,000 to $1,250,000.

INDIANAPOLIS.—The Indianapolis Cable Excavating Co. has been organized to manufacture cable excavators and other machinery; $10,000; by Claude F. Negley, manager of the Fall Creek Sand Co., 1121 Jefferson avenue; Matthew C. Mayhew, 1001 Berwyn avenue, and John Kingsbury, 617 Law building, all of that city.

INDIANAPOLIS.—The Cole Motor Car Co. has approved plans for a modern factory building to cover an entire city block near the center of that city. This factory will be constructed in quarter sections, one having already been finished. The company is using this method to avoid any interference with production. The Cole Motor Car Co. is entering on its fifth year and will double its paid in capital stock next July, bringing the aggregate to $1,000,000.

INDIANAPOLIS.—The Capitol Body Co., designer and manufacturer of automobile bodies, whose corporation was noted in THE IRON TRADE REVIEW, Feb. 27, advises that it has secured a long-time lease on the property formerly occupied by the Piel Bros. Mfg. Co., located at Madison avenue and Ray street. These buildings containing 41,000 square feet of floor space, are being equipped with wood working and sheet metal machinery. All machines will be unit motor driven. The company expects to be in operation by March 15, and is expecting to maintain a capacity of 6,000 car bodies annually.

LAPORTE.—The Laporte, Logansport & Southern railroad, recently incorporated, capital $100,000, already has begun a survey from Laporte to Logansport. Ora Basserman is president and Carl Loetz, secretary.

LAPORTE.—The Laporte Gas & Electric Co. has been organized to supply Laporte and adjoining towns with light, heat and power. William A. Martin and Charles M. Cook, of Laporte, and Benjamin C. Robinson, of Grand Rapids, Mich., are directors.

LIBERTY.—The Rude Mfg. Co. has increased its capital stock to $300,000 and will enlarge its plant considerably. It manufactures grain drills and other farm machinery. J. F. Rude is secretary and treasurer of the concern.

MARTINSVILLE.—The city council has passed an ordinance granting a franchise to the Citizens' Electric Light, Heat & Power Co., for 20 years.

MONTPELIER.—The Montpelier Utilities Co. has been incorporated to supply light, heat and power; $50,000; by John P. Boyd, Guy R. Brackin, Rowland J. Sidey.

MUNCIE.—The Derrickson Mfg. Co. has been incorporated with a capital stock of $125,000, to manufacture automobile accessories. Among the incorporators are Harry S. Osborn and R. C. White, both of Muncie.

NEW ALBANY.—G. W. Watkins and S. A. Tescher, of Indianapolis, have interested commercial bodies of Louisville, Ky., and New Albany and Jeffersonville, Ind., in the establishment of an industrial site on the north side of the Ohio river at that point, announcing that they are preparing to locate three new iron-working concerns. The commercial organizations porbably will arrange to give free site to the new concerns.

PERU. — The Crum-Wiley Mfg. Co. has been incorporated to manufacture metal products; $30,000; by E. L. Crum, Max Crouse, S. A. Shesler, Will H. Brown, J. R. Woodring.

PLYMOUTH. — The Plymouth Electric Light & Power Co. has been incorporated to operate a heating and light plant; $100,000; by Charles D. Virginia and Isaac Snorberger.

RICHMOND.—The city council will receive bids for furnishing and installing $70,000 worth of new machinery in the municipal electric light plant.

ROCHESTER.—The power plant of the Rochester Electric Light, Heat & Power Co. is to be enlarged and new machinery added. Additional interurban railway lines also are to be built the coming two years.

SYRACUSE.—The Gilderman Mfg. & Foundry Co. has been incorporated to manufacture a line of machinery; $15,000; by George W. Gilderman and Henry C. Plumback of Syracuse; W. N. Rumely, Charles E. Wolfe and Andrew J. Hickey, of Laporte, Ind.

TERRE HAUTE. — The Western Indiana Oil & Gas Co. has been incorporated to sink and operate oil and gas wells; $300,000; by Fred W. Lockhart, Will A. Church, Margaret F. O'Reilly.

WARSAW.—The Dalton Foundry is building a new plant, which it expects to have completed and occupy by April 1. The plant, which is of steel and concrete construction, consists of a main foundry 80 x 150 feet, core room 32 x 50 feet, shipping room and machine shop 50 x 125 feet. Two cupolas will be operated, one with a capacity of four tons and the other with a capacity of eight tons per hour. The company is inquiring for trolleys to run on 8-inch I-beams, and at a later date expects to purchase a self-supporting crane. The company will specialize on heavy bench work, such as gear blanks, steam pressure valves, etc.

IOWA

CEDAR RAPIDS.—The Cedar Rapids Brick Co. contemplates constructing three more kilns, after having just recently completed four kilns.

CEDAR RAPIDS.—The Iowa Railway & Light Co. has placed an order with the Westinghouse Electric & Mfg. Co., Pittsburgh, for four double equipments of motors.

CLARINDA.—E. A. Murphy is planning to build a gas works plant at Clarinda.

CLINTON.—Curtis Bros., sash and door manufacturers, will build at once a modern

factory building, 75 x 180 feet, five stories, to take the place of their present plant.

DES MOINES.—C. R. Speers, president of the Shorthill Structural Iron Co., has opened offices in the Silverberg & Lince building, Des Moines. The company has one plant at Marshalltown and is building another at Perry.

FONTANELLE.—City authorities are considering buying an electric power and pumping plant. No contracts have been let as yet.

HUMBOLDT.—The Northern Iron Power Co. is hurrying to completion its $30 000 auxiliary steam plant.

LOMAX.—C. S. Northrop, Kansas City Mo., has organized a company to build and operate an automobile factory.

MEDIAPOLIS.—The city council is considering buying an electric light plant.

SHENANDOAH.—P. A. Kryselmier, manager of the Shenandoah Brick & Tile Co., advises that two new down-draft kilns will be erected at once.

KANSAS

BUFFALO. — Central station power and lighting service will be provided by the Buffalo Electric Light & Power Co., recently organized, which is planning erection of a plant.

KANSAS CITY.—The Kansas City Structural Steel Co. is enlarging its plant, a machine shop now being under construction and several other buildings being under consideration.

KENTUCKY

ASHLAND.—No. 2 furnace of the Ashland Iron & Mining Co. has just been relined by the P. J. Brown Construction Co., 1342 Rockefeller building, Cleveland.

ASHLAND.—The Ashland Coal & Iron Railway Co. has, in the course of construction, several additions to its shops at Ashland, and is installing a 400-kilowatt generator to take the place of steam power.

CORBIN.—The city is ready to proceed with the letting of contracts for the installation of a $30,000 waterworks plant, plans for the system having recently been completed. Address the city clerk.

DANVILLE.—Chicago interests have purchased another electric light plant in central Kentucky. It is understood these interests are arranging to build a power plant at Cumberland Falls. The Kentucky Utilities Co., controlled in Chicago, which has acquired the lighting plants at Summerset and a number of other Kentucky towns, and the United Light & Development Co., also controlled by Chicago interests, and which has purchased the Danville electric light plant and the plant at Paris, as well as a number of smaller plants, have plans to establish one central plant in each section, which will furnish electric current for all surrounding towns.

HAZARD.—The Hazard Light & Power Co. has been incorporated; $10,000; by W. E. Hemphill, B. P. Wooten and J. T. Lovelave.

LANCASTER.—Garrard county is planning the purchase of a lot of road-building equipment, having arranged for the construction of several miles of pike this year. The fiscal court has offices at Lancaster.

LOUISVILLE.—Additional machinery will be purchased in the near future by the Sutherland Automobile Appliance Co., Second street and Broadway, manufacturers of air appliances. E. J. Ashcraft is president.

LOUISVILLE.—The Harlan Coal Mining Co. has sold a plant it has just completed near Harlan, and is planning the installation of equipment on another tract. K. U. McGuire, Board of Trade building, may be addressed for details.

LOUISVILLE.—The Louisville Water Co. will construct a 36-inch main, several miles in length, according to plans recently submitted by Theodore Leisen, chief engineer. The cost of the work will be between $300,000 and $400,000.

LOUISVILLE.—The Louisville Bridge Co., which is controlled by the Pennsylvania railroad, is planning the construction of a new bridge over the Ohio river at Louisville, and will announce detailed plans as soon as they are approved by the Federal authorities. Charles H. Gibson, Louisville, is president of the company.

MIDDLESBORO.—It is announced that Dr. L. L. Robertson has sold the Middlesboro Electric Co. to the Kentucky Utilities Co. The price is above $100,000.

PADUCAH.—The Kentucky Southeastern Electric Railway, Light & Power Co. will let contracts in the immediate future for the construction of 55 miles of interurban line. The construction of a power plant will be arranged for in the immediate future.

PARIS. — The Kentucky Distilleries & Warehouse Co., Louisville, suffered $100,000 loss by fire which destroyed the plant of the Paris Distilling Co. It will be rebuilt. The power house and the grain handling plant suffered the greater damage.

PIKESVILLE.—A large power station is being constructed at Jenkins, Letcher county, 40 miles south of Pikesville. The plant will have five units capable of developing an aggregate of 13,000 horsepower. Another plant of similar capacity will be built at Vanlear, Johnson county, 35 miles from Pikesville, to operate a division of Consolidated mines at that place. A car line will be constructed across country between those two plants, via Beaver Creek. The Consolidated Coal Co. is backed by J. R. Clark, of Fairmont, W. Va.

PLEASUREVILLE.—The Kentucky Utilities Co., Lexington, is preparing for the immediate installation of an electric light plant at Pleasureville, where it recently secured a franchise.

LOUISIANA

NEW ORLEANS.—A. Dussel & Co. have bought at auction sale the plant of the Connell Iron Works, which they have occupied for some time. In view of ownership considerable money will be spent in improvements and additions.

NEW ORLEANS.—The Louisville & Nashville Railroad Co. has bought the site and plant of the Johnson Iron Works in this city to complete its holdings of an entire block for terminal purposes. The Johnson Iron Works will build in another location. The sale did not include equipment or contents of the buildings.

SHREVEPORT.—The North Louisiana Electric Railway Co., recently incorporated, advises its line as proposed will be 110 miles long, from Shreveport, via Minden, Homer and Ruston, to Monroe, La. It will traverse six counties and connect five county seats. Natural gas will be the fuel. The bonds are not yet placed.

VIVIAN.—The Woodland Oil & Gas Development Co. has been incorporated to develop oil and gas lands; $200,000; by C. E. Dennison, D. A. Williamson, E. E. Mosher, all of Vivian.

MAINE

DEXTER.—The foundry annex of the Fay & Scott machine shop was badly damaged by fire recently.

MASSACHUSETTS

AMHERST.—The Amherst Power Co., of which Philip Cabot, Boston, is president, has bought the business of the South Hadley Falls Electric Co. A sub-station will be established at the Falls and the system extended to Granby. Modern equipment will be installed and numerous other improvements are contemplated by the new management.

BILLERICA.—The locomotive and car repair shops of the Boston & Maine railroad should be occupied and in operation by July. The buildings of the new plant are of brick with steel frames, there being approximately 4,000 tons of steel used. The plant includes the locomotive repair building, 830 x 60 feet, two stories; blacksmith shop, 332 x 90 feet; passenger car shop, 282 x 314 feet; car paint shop, 314 x 265 feet; and car machine and car blacksmith shops, each 200 x 250 feet. The locomotive repair shop will be served by two 65-ton capacity electric traveling cranes, The boiler shop will have two 10-ton capacity traveling cranes, with a 75-foot span, and the machine shop will be equipped with a 35-ton crane. The total cost of the plant will approximate $2,500,000. The contract for machine tools has not yet been placed, and probably will not be placed until next month.

BOSTON.—The General Electric Illuminating Co. will erect a power plant on Stuart street.

BOSTON.—The Merritt Metal Process Co. has been incorporated; $125,000; by Walter T. Hannigan, Chaster G. Clark, Eugene G. Smith.

BOSTON.—Braman, Dow & Co., recently losers by fire, advise they had insurance to cover the loss and that a new building will be put up at once. Equipment for the machine shop is being purchased now.

BOSTON.—Densmore & LeClear are making preliminary plans for a hotel 120 x 132 feet, ten stories, at Boylston, Church and Providence streets, by the owners of the Thorndike hotel.

BOSTON.—The Waterhouse Welding Co. has been incorporated; $15,000; directors, George B. Hastings, of Brookline, president and treasurer, J. C. Johnston and M. M. Reagan.

BOSTON.—The stockholders of the Massachusetts Electric Co. have authorized the trustees to issue $3,500,000 coupon notes to be sold at their discretion, the proceeds to be used in part to repay an issue of notes which will mature July 1. The sale of all first preferred stock of the Bay State Street Railway Co., which the Massachusetts Electric Co. may have acquired during the current year, also has been authorized.

BOSTON.—The Peerless Welding & Mfg. Co., successor to the Peerless Welding Co., advises the succession took place Jan. 1, and the new company was incorporated under Massachusetts law. E. W. Saunders of the old company, and H. D. Waterhouse form the company. Welding of all metals, particularly applied to the automobile industry, is the aim of the concern. Contract work, welded pressure tanks, structural work and some wrecking are being done.

FITCHBURG.—The Union Foundry Co. is building a large addition to its main foundry which, when completed, will double the present capacity. Contracts for the buildings and the new machinery necessary have all been placed. The contracts call for completion within six weeks.

LOWELL. — The Saco-Lowell Machine Shops, formerly the Lowell Machine Shop, will add two buildings, plans for which are being drawn. The buildings will be for foundry and cupola, the foundry, 50 x 220 feet, one-story; and the cupola, 47 x 73 feet,

estimated to cost $50,000. The Hooper-Faulkner Engineering Co., New York City, is the consulting engineer. Bids on the general contract have already been asked.

PITTSFIELD.—Thirteen transformers, said to be the largest in the world, are nearly completed at the plant of the General Electric Co., Pittsfield. They are of identical design and are 26 feet 3 inches in height, and cover floor space 14 feet 8 inches by 7 feet 1 inch. They are rated at 91,000 horsepower.

SALMON FALLS.—The Salmon Falls Mfg. Co. has been chartered; $600,000.

SOMERVILLE.—The Stone Wire Goods Co. has been incorporated; $15,000; by John S. Lawler, George A. C. Stone, Elizabeth E. Stone.

SPRINGFIELD.—The Millers River Power Co. advises it is planning a hydro-electric development, but at this time cannot give details of its plans.

SPRINGFIELD.—The Stone Metal Products Co. has been incorporated; $50,000; by Robert A. Knight, Clarence J. Wetsel, Walter A. Powers.

SPRINGFIELD.—Two boilers are to be added to the power plant of the United States armory here, a step in rebuilding the entire power plant. It is planned to install a turbine and dynamos.

SPRINGFIELD.—Work has been started on the steel work of the new shop for the Jones & Lamson Machine Co., the foundation for which was laid last fall. The structure is to be of the saw-tooth pattern for the maximum amount of light. The New England Structural Co. has the contract.

SPRINGFIELD.—The Sturtevant Merrick Co. is to erect a storage and office building, skeleton frame and reinforced concrete and brick panels. It will be 100 x 170 feet, four stories, and basement. The Casper Ranger Construction Co., of Holyoke, Mass., has the general contract.

SPRINGFIELD.—Business men are interested in a proposition to have the main offices of the Package Machine Co., recently incorporated for $5,000,000, located in Springfield. The new company resulted from a consolidation of the Berger Machine Co., Springfield, the Thomas F. Condon Wrapping Machine Co., New York, the National Wrapping Machine Co., Milwaukee, the S. B. Redding Co., Chicago, and the Armstrong Co., Elgin, Ill. It is argued that the volume of business which it is expected the concern will do in the east will warrant the establishment of its central offices in New England. Fred N. Merrill, Milwaukee, is the president of the new corporation and Frank H. Page, Springfield, is a director.

WOLLASTON. — The Angier Mills has been sold to the A. O. Miller Treeing Machine Co., of Brockton.

WORCESTER. — The Worcester Consolidated Street Railway Co. is to erect and equip a transformer station in Southbridge and Sargent streets. About $15,000 worth of equipment will be installed, including three 500-kilowatt transformers.

WORCESTER.—The Worcester Electric Light Co. has awarded the Westinghouse Co., Pittsburgh, the contracts for a 7,800-kilovolt-ampere turbine and auxiliary machinery. Orders for two 700-horsepower boilers have been placed with the Edgemoor Co., Edgemoor, Delaware. The new equipment will practically double the capacity of the company's power plant and will represent an expenditure of about $250,000.

MICHIGAN

BATTLE CREEK.—The International Wire Fence Co. has changed its name to the National Fence Machine Co.

BATTLE CREEK.—The King-Saxton Clamp Co. has been organized with a capital of $25,000, to manufacture a hose clamp.

BAY CITY.—The MacKinnon Boiler & Machine Co. advises it has bought a site for a new factory and is figuring on plans but cannot state at this time when construction will start or what equipment will be needed.

BAY CITY.—Three of the 12 new 120-ton self-propelling steam cranes ordered by the Pennsylvania railroad from the Industrial Works, were tested in the shop yard at Altoona, Pa., recently. Instead of levers being used to raise and lower the boom, air operated clutches are substituted.

DETROIT.—The King Motor Car Co. has been incorporated to manufacture motor vehicles.

DETROIT.—The Chandler Motor Car Co. advises that it expects to erect a new factory building in the near future, and that the general offices of the company have been removed from Detroit to 1105-1108 Swetland building, Cleveland. F. C. Chandler is president and C. A. Emise, vice president and sales manager.

DETROIT.—The Union Steel Screen Co., Albion, has opened an office in the Builders' & Trades Exchange building, Detroit, from which the company intends to handle, in the future, all wire and iron work. L. G. Lamborn, formerly with the E. T. Barnum Wire & Iron Works, is in charge of the new office.

DETROIT.—The old plant of the Michigan Twist & Drill Co., northwest corner of Bellevue and Warren avenues, has been sold to William F. Evans, of Milwaukee, who is forming a company to manufacture auto accessories. The Michigan Twist & Drill Co. some time ago was merged into an Ohio corporation.

DETROIT.—Plans are being prepared for an 18-story office and mercantile building to be erected in the down-town business section of Detroit, early in the spring of 1914. The building will be constructed of steel with terra cotta exterior trimmings and will be modern in every detail. It is to cost $1,250,000. The four lower floors are to be for shop purposes and the upper 14 floors devoted to offices. D. H. Burnham & Co., of Chicago, are preparing the plans.

GRAND RAPIDS.—The Michigan Hearse & Carriage Co. has increased its capital from $30,000 to $75,000.

GRAND RAPIDS.—The International Harvester Co. has purchased a lot 50 x 132 feet on Wealthy street, on which it will build an addition to the present building.

GRAND RAPIDS.—A concrete and steel grandstand is proposed for the race-track of the West Michigan State Fair association's grounds here. Estimates and sketches are asked by the committee in charge of the stand. About 100 boxes in addition to the seats are desired.

JACKSON.—The Michigan Central railway will enlarge the Junction shops this spring.

MUSKEGON.—It is reported that the Montague Iron Works will resume, the new company being known as Housler & Wilson. A specialty of marine engines will be made.

MUSKEGON.—The West Michigan Steel Foundry Co., manufacturer of magnetic steel for electrical purposes, has made rapid strides since it began business in Muskegon last December. The plant now covers about five acres. W. E. Jeannott is president and treasurer and A. Shaw, vice president and general manager.

SPARTA.—Notice has been posted by the Holms Mfg. Co. that the gasoline engine department is not to be removed to Evansville, Ind., as had been announced. The Hercules Buggy Co. of Evansville, Ind., is owner of the concern.

WYANDOTTE.—The Moore Truck & Mfg. Co. has been incorporated to manufacture trucks; $20,000.

MINNESOTA

FAIRMONT.—A. P. Jensen is installing some new machinery in his shop.

INTERNATIONAL FALLS. — Nelson & Twaddle will open a machine shop at International Falls.

LA CRESCENT.—W. Smith Grubber Co. has been incorporated as the Crescent Foundries.

MARSHALL.—J. T. Hinkel of Slayton has bought the machine business of Henderson & Co.

MINNEAPOLIS.—Fire recently damaged the building with contents of the Motor Car Equipment Co. on Washington avenue to the extent of $10,000.

MINNEAPOLIS. — The Shotwell—Harris Co. has approved plans and will ask for bids soon on the construction of a plant in the automobile district, at Sixteenth street and Hennepin avenue, for the manufacture of tools and dies.

MINNEAPOLIS.—The Washburn Crosby Co. may decide to start work on its new building sometime during the latter part of this year. Plans for this building were drawn up in 1910, at which time the general design, size and manner of construction were decided upon.

NORTHFIELD.—The Northfield Iron Co. is erecting a factory building which will be completed in May.

NORTHFIELD.—W. A. Pridmor, of Stillwater, will move his foundry to Northfield, after which it will be managed by his son.

WAVERLY.—The Central Minnesota Light & Power Co. has made a proposition to establish an electric light plant here.

MISSISSIPPI

BROOKHAVEN.—The Arrington Foundry & Machine Co. has been incorporated; $10,000; by A. C. Arrington, E. Arrington and others.

HATTIESBURG.—The Hattiesburg Foundry & Machine Works, a new company, which recently took over the property of the Watkins' Machine & Foundry Co., as noted in THE IRON TRADE REVIEW, Feb. 6, is making several changes and rapidly putting the plant in first-class order. A tool room has been built at one end of the main building, and an office addition at the other end. New equipment is being added. Newt Rockett is general manager and Thomas St. John, assistant manager.

LAUREL.—The Laurel Plumbing & Metal Co. has been incorporated; $10,000; by R. R. McCormick, C. D. Hill and others.

MISSOURI

CARTERVILLE. — The Becker Mines Co. has been incorporated; $10,000; by B. Becker, S. Smith, and M. B. Becker.

JEFFERSON CITY.—Incorporation in Texas has been filed by the National Iron & Steel Co., capitalized at $10,000, with Missouri capital of $2,000. Headquarters are to be in St. Louis.

JOPLIN.—The Producer Mining Co. has been incorporated; $30,000; by J. M. Mason, E. B. Wilcox, E. N. Cunningham, D. F. Plumber, P. S. Tobin.

KANSAS CITY.—The Kansas City Terminal Railway Co. has under consideration the erection of a power house, the details for which are being handled by Jarvis W. Hunt,

of Chicago. A. J. Stewart is purchasing agent of the Terminal Co.

ST. LOUIS. — The Admiral Motor Car Works, recently incorporated at $50,000, has begun manufacturing operations.

ST. LOUIS.—F. M. Greenup, 2936 St. Vincent, is inquiring for a one or two-horsepower alternating current electric motor.

ST. LOUIS.—Curtis & Co. Mfg. Co. advises that its new shops have been completed and equipment installed and that the plant will be in operation in a few days.

ST. LOUIS.—The John Berry Automobile Co. has been incorporated to manufacture and build automobiles, airships, etc.; $20,000; by John Berry, Albert Bommer, Louis J. Koenigstein.

ST. LOUIS.—The Bayer Steam Soot Blower Co. will build a $12,000 addition at La Salle street and Ewing avenue. The company has a capital of $100,000, and manufactures and markets a mechanical device for cleaning soot from water-tube boilers.

ST. LOUIS.—A building permit for a seven-story mill building recently was issued to the Valier & Spies Milling Co. A new building is to be erected on a tract of one and one-half acres at Marcus avenue and the Terminal railroad tracks.

MONTANA

BILLINGS.—The Billings Auto & Machinery Co. has been incorporated; $15,000; by Paul Behrendt, Frieda Behrendt, W. C. Stelt.

NEW JERSEY

CAMDEN.—The Par Keel Wheel Co. has been incorporated to buy, sell and deal in automobiles; $100,000; by Frank S. Muzzey, F. Stanley Sauman, Frank A. Kuntz.

CAMDEN.—Temporary receivers of the Philadelphia Steel & Wire Co. have been appointed. The complainants charge that the company is insolvent with liabilities of about $234,000 and assets of about $200,000. The temporary receivers are Lewis Starr, of Camden, and Augustus R. Archer, of Philadelphia.

EAST ORANGE.—The White Fire-proof Construction Co. has been incorporated to manufacture fire materials; $100,000.

NEWARK.—The Heilon Heister Co. has been incorporated to manufacture boilers and engines; $200,000; by Arthur H. Crawford, Lewis R. Compton, George W. Wilson.

PASSAIC.—The Garfield Wire Cloth Co., which was incorporated Feb. 20, as noted in THE IRON TRADE REVIEW, of that date, advises that the plant will be increased and will manufacture all grades of brass, copper and steel wire cloth. This company took over the business of David La Beaur, that had been established five years. The works are situated at Garfield, and the offices in Passaic. The officers are David La Beaur, president; John V. Plaat, vice president; W. N. Kip, secretary and treasurer.

PORT CHESTER.—Abendroth Bros. have let a contract for a 50 x 100-foot fireproof building, one and two stories, the two-story portion to be provided with foundations strong enough to support six stories. They have also contracted for the installation of an electric magnet crane.

TRENTON.—The New Jersey State Hospital for the Insane has requested an appropriation to cover the erection of a new electric power plant for lighting and heating the buildings of the institution. It is estimated to cost $60,000.

NEW YORK

BINGHAMTON. — The Hotchkiss Metal Form Co., formerly of Carbondale, Pa., will occupy the new building being erected by the Cement Products Co., on Jarvis street, after April 1. The capital stock of this company was increased recently from $15,000 to $36,000. This company manufactures metal forms for cement sidewalk construction, walls for buildings and cement posts.

BROOKLYN.—The United States Spring Co. has been incorporated to manufacture and deal in metal springs; $15,000; by John T. Booth, 271 Broadway, Owen Walsh and David Nelosn, both of 94 High street.

BROOKLYN.—Joseph Vogel, Inc., has been granted a charter to do metal work.ng and stamping; $10,000; by Joseph Vogel, 95 South Fifth street, Brooklyn; Hyman Wlodaver, 149 East Broadway, New York City; Joseph Chavenson, 2022 Lexington avenue, New York City.

BUFFALO.—The Lackawanna Steel Co. will add to the electrical equipment of its plant three 200-horsepower motors recently ordered from the General Electric Co.

BUFFALO.—The J. P. Devine Co., vacuum drying apparatus, advises its new buildings, which will be completed by May 1, are a two-story office building, 35 x 120 feet; a machine department, 95 x 202 feet, and a boiler department, 50 x 202 feet. Contracts for equipment have been let as follows: Cranes, Chisholm & Moore; boilers, Pennsylvania Boiler Works; scales, Buffalo Scale Co.; steel, Lackawanna bridge Co.; carpenters, Hager & Sons; machinery, Lodge & Shipley Co. The architects are Wood & Bradney, and the general contract was given Chas. Bradney & Sons.

CORNING.—The Pitzele Stove Co. has been incorporated; $15,000; by M. A. Isaacs, S. E. Spikes, S. Reigler and H. A. Isaacs.

FABIAS.—The Static Electro-Eradicator Co. has been incorporated to manufacture electrical apparatus for removing static electricity from machinery; $25,000; by E. L. Vezina, A. H. Smith, H. S. Palmer, of Syracuse.

GENESEO.—The town board has decided to build a steel bridge across the Geneseo river between that town and York.

MOUNT VERNON. — The Motor Truck Mfg. Corporation has been incorporated to manufacture motors, engines and machinery; $150,000; by Arthur J. Albert, Louis Bertsch, Henry Hilchenbach, all of Mt. Vernon.

NEWBURG.—The Alberger Pump & Condenser Co. is receiving bids for the construction of a two-story addition to its factory. The builidng wll be 165 x 55 feet.

NEW YORK CITY.—The New York office of the American Iron & Steel Mfg. Co. has been moved to rooms 1923-25 Whitehall building, 17 Battery Place.

NEW YORK CITY.—Plans have been filed with the city building department for thirteen one-story factory buildings, estimated to cost $50,000. The buildings will be 14 x 30 feet and will extend along Charlick street, Brooklyn.

NEW YORK CITY.—The Wingender Mfg. Co. has been incorporated to deal in and manufacture iron and steel articles; $5,000; by George Wingender, Edward A. Kenney and E. J. Kenney, all of 414 West 121st street, New York City.

NEW YORK CITY.—The Art Foundry Guild, brass and metal founder, has been incorporated; $100,000; by A. B. Gwathmey and William Mitchell, both of 20 Exchange place, and William B. Lightfoot, 32 Broadway, New York City.

NEW YORK CITY.—The Pressed Steel Co. of New York has been incorporated; $75,000; by A. S. Van Buskirk, Keyport, N. J., H. V. V. Butler, 2666 Mansfield place, Brooklyn, and Bradford Butler, 141 Broadway, New York City.

NEW YORK CITY. — Loss & McNeil, architects, 39 East Forty-second street, have completed plans for a six-story factory building to be erected on Fifty-first street near Twelth avenue. The building will be 50 x 138 feet, and is estimated to cost $40,000.

NEW YORK CITY.—The French Range Mfg. Co. has been incorporated to manufacture French ranges, tin, iron, etc.; $10,000; by Peter Vignati, 262 Hudson avenue, West Hoboken, N. J.; Peter A. Prandoni, 428 Eleventh avenue, New York; Harry Sturns, Hillsdale, N. J.

NEW YORK CITY.—The Albert E. Eldredge Corporation has been formed to manufacture motors, machinery, etc.; $7,000; by A. E. Eldredge, 75 Echo avenue, New Rochelle; John J. H. Poillon, 532 West 143rd street, New York, Julia M. Wilkinson, 60 Pearl street, Paterson, N. J.

NEW YORK CITY.—The Ostrander Machine Co. has been incorporated to manufacture machinery, etc.; $60,000; by Alfred I. Ostrander, 2386 Davidson avenue, Martin J. Lyons, 1795 Popham avenue, and Charles F. Muller, 390 Mott avenue, New York City.

NEW YORK CITY.—The Experimental Machine & Die Co. has been incorporated; machinery, tools, hardware supplies, etc.; $50,000; by F. M. Condon, 25 Broad street, New York City; Louis M. Petruccelli, 462 Eighty-first street, Brooklyn, and William A. Condon, 169 Broad street, New York City.

NEW YORK CITY.—The Thomas Sales Co., Inc., has been granted a charter to manufacture and sell heavy machinery of all kinds; $75,000; by John J. Mulhern, 909 Gates avenue, Brooklyn, N. Y., Herbert Hipwell, 111 West 123rd street, New York City; Stephen G. Fiero, 159 Bainbridge street, Brooklyn, N. Y.

NEW YORK CITY.—Sealed proposals will be received up to 2 o'clock p. m., March 21, at the office of the supervising architect of the treasury department, for tenders on a controllable standpipe or sprinkler system, fire escapes and elevator shaft enclosures for the United States appraisers' warehouse at New York City.

NEW YORK CITY.—Sale of the E. R. Thomas Motor Co. will take place on the premises March 17-22 under the auspices of J. E. Conant & Co. It is said this is the greatest and most comprehensive collection of the latest approved and valuable high speed automatic tools and general machinery ever offered at a public auction. No limit or reserve will be placed on any lot.

NEW YORK CITY.—The A. J. Fritschy Corporation has been incorporated to manufacture elevators and general iron work; $3,000; by Alphonse J. Fritschy, 278 Central avenue, West Hoboken, N. J., Abraham Kaplan, 68 Edgecomb avenue, New York City; James A. Radcliffe, 361 Summit avenue, West Hoboken, N. J.; S. Herbert Radcliffe, Ridgewood, N. J.

NEW YORK CITY.—The National Biscuit Co., Tenth avenue and Fifteenth street, will soon begin work on a twelve-story manufacturing building that will cover the entire block bounded by Fifteenth and Sixteenth streets, Tenth avenue and Marginal street. A. G. Zimmerman, 11 East Twenty-fourth street, prepared the plans, which it is estimated will cost between $1,000,000 and $1,500,000 to complete.

NIAGARA FALLS.—The McGarigle Machine Shop recently was damaged by fire to the extent of approximately $10,000.

RIVERHEAD.—The Riverhead Agricultural Works has been incorporated to manufacture

and repair agricultural implements; $20,000; by Dwight T. Cowin, Adam Hill Jr. and George L. Young, all of Riverhead.

ROCHESTER. — The Coons-Mabbett Mfg. Co. has been incorporated to manufacture evaporating machinery; $20,000; by Burton C. Coons and L. G. Mabbett, both of 60 Reynolds Arcade, and John A. Taylor, 18 Front street, Rochester.

ROCHESTER.—The Railway & Light Co. is planning to build works to manufacture concrete poles, posts and forms used in manholes. The new plant, which will be equipped with electric hoists for handling the raw material and finished product, will be 40 x 80 feet, giving a capacity of 2,000 poles a year.

ROME.—The contracts for an addition to the tube mill of the Rome Mfg. Co.'s plant have been let. The contract for the steel work was awarded to the McClintic-Marshall Construction Co., Pittsburgh, and the general contract, to E. K. Fenno, Syracuse. The addition is to be of concrete construction, 70 x 170 feet. Work is to be completed by May 1. Charles Kiehm of Utica, structural engineer, awarded the contracts.

SPRING VALLEY.—The Rockland Light & Power Co. plans a new line of wires from Spring Valley to Suffern.

STATEN ISLAND.—The structural steel contract has been let for an addition to the Jewett Works of the National Lead Co., 11 Broadway, New York City. The improvement is estimated to cost between $75,000 and $100,000.

SYRACUSE.—The Atlas Die Casting Co. has been incorporated to make castings in bronze, aluminum, steel, iron, etc.; $10,000; by Frank R. Holmes, Morey S. Smith and S. G. Schlachter, all of Syracuse.

WAVERLY. — The Ingersoll-Rand Co. is having plans prepared for an addition to its Waverly plant, known as the Imperial Pneumatic Tool Co. D. A. Keefe is preparing the plans.

NORTH CAROLINA

LEXINGTON.—J. E. Serrine, engineer and architect in charge of the new Belvidere mills at Lexington, authorizes the statement that the present addition to the mills is to be one and two-stories, 666 x 132 feet, mill construction, and will cost $125,000. He states also that on its completion a duplicate will be erected. The investment in building and equipment will be $2,000,000.

OHIO

AKRON.—The Quaker Washboard Co. has been incorporated to manufacture washboards and hardware specialities; $3,500; by J. A. E. Myers, C. L. Dinsmore, Charles M. Mishler, A. M. Tachantz, M. Paul.

ALLIANCE.—The Electric Furnace Co. has increased its capital stock from $50,000 to $100,000.

BELLAIRE.—Extensive improvements are being planned on the property of the Rail & River Coal Co., recently purchased by the Grand Trunk railroad. An expenditure of $250,000 on the three mines of the company is to be considered.

BELLEFONTAINE. — The city counsel probably will increase the facilities of the municipal electric light plant, owing to increase of business.

BELLEVUE.—The ordinance granting the Bellevue Illuminating & Power Co. a franchise, has passed the council of this city, and has been accepted by F. D. Carr, of Cleveland, in behalf of the company. The company agrees, under its franchise, to install a new system of lighting.

BOWLING GREEN.—The Bowling Green Motor Car Co. has certified to an increase of capital from $100,000 to $200,000.

BRADNER.—The Bradner Brick & Tile Co. has been incorporated to make articles from clay; $20,000; by F. A. Silverwood, George A. Flanders, Daniel Stahl, J. W. Stiger, F. C. Hoxworth, C. H. Kootier.

BRYAN.—G. C. Beucler, auditor of Williams county, opened bids March 4, for constructing the Hajay bridge, steel superstructure only, estimated cost $2,581, and the Sam Garns bridge, reinforced concrete, both sub and superstructure, estimated cost $1,484.

CANTON.—The Harper Tire & Rubber Co. has been incorporated to manufacture and deal in automobile tires; $100,000; by Warren D. Harper, James Thomas, A. H. Vayo, Byron B. Baughman and C. B. Bour.

CANTON.—The United Steel Co. is installing a Deane triplex power pump, electrically driven, and electrically controlled; also a Worthington centrifugal general service pump. This is understood to be in line with a contemplated large increase in the capacity of the plant.

CINCINNATI. — The extension to the plant of the King Machine Tool Co. will be about 6,000 square feet.

CINCINNATI.—The Stewart-Warner Speedometer Co., now at 925 Race street, will soon move to new quarters at 917 Race street.

CINCINNATI.—The Globe Chemical Co. is inquiring for a 25-horsepower tubular boiler. State price and description.

CINCINNATI.—The Cleaner Supply & Equipment Co., manufacturer of machinery for cleaners, dyers and laundries, will soon begin operations. E. W. Griffin, L. A. Booth and H. M. Dreves are interested in this project.

CINCINNATI.—The Triumph Ice Machine Co. reports the following recent sales: Vinita Electric Light, Ice & Power Co., Vinita, Okla., 25 ton ammonia compressor, and the Tifton Ice & Power Co., Tifton, Ga., 25-ton ice making tank.

CINCINNATI.—The city council has been asked by residents of Avondale and Mt. Auburn to arrange for the construction of a new bridge to take the place of the one spanning Reading road. The structure as proposed would cost about $35,000.

CINCINNATI.—The Brown Carriage Co., 1630 Gest street, was damaged to the extent of about $8,000 by fire on March 6. The fire was confined chiefly to the blacksmith shop, the finishing department, and the shaft-turning department.

CINCINNATI.—The Victor Lamp Co. will add an addition to its plant, the dimensions of which will be 60 x 200 feet, four stories. Architect Martin Fischer, Cincinnati, has charge of the drawing up of the plans. The company recently received a large order for automobile lamps.

CINCINNATI.—The Buob Wheel Co. has leased a new factory building at Canal and Sycamore streets, containing about 22,000 feet of floor space. The company is now located at 554 Freeman avenue, Cincinnati, and is engaged in the manufacture of wheels and gears.

CINCINNATI.—The plants of the Globe Register Co. and the Automatic Typewriter Co., both located in the Interurban Railway & Terminal building, at 415-419 Sycamore street, were destroyed by fire on March 6. The loss of the former company is estimated at about $30,000, and the latter at about $8,000.

CINCINNATI.—The J. K. Nickerson Co. has been incorporated to manufacture fireproof doors and metal lockers; $15,000. Mrs. J. K. Nickerson of that city, who is president of this company, states that operations will be begun as soon as a location can be secured. Mrs. Nickerson has been president of this company for the past eight years.

CINCINNATI.—The Ohio Knife Co. has decided to build a factory at the intersection of Dreman street and the C., H. & D. railroad, in South Cumminsville. Bert Baldwin & Co. recently let the contract for the steel work on the main building to the Pothoff Construction Co., and for the metal work to the Freund Roofing Co. The building will be 117 x 360 feet, one story.

CINCINNATI.—John Hill, who for the past 15 years has been president of the Hill & Griffith Co., which firm operates a foundry on State avenue, that city, has resigned to form the John Hill Co., of which he is the sole owner. A five year lease has been obtained on the old plant of the Hickory Carriage Co., South street, with a privilege of purchase, for $100,000. The new company will manufacture foundry facings and will begin operations about April 1. Mr. Hill has been active in the foundry business for over 25 years.

CLEVELAND. — The West Steel Casting Co. has increased its capital from $80,000 to $100,000.

CLEVELAND.—The Cleveland Speed Indicator Co. has been incorporated; $10,000; Arthur Friedman, Leo Friedman, O. Friedman, Marshall R. Stewart.

CLEVELAND.—The local office of the National Erectors' Association is now located at the Builders' Exchange, Chamber of Commerce building.

CLEVELAND.—The Charles E. Stamp Co. advises that it has secured an order from the Binz Monument Works for one 10-ton three-motor electric traveling crane.

CLEVELAND.—The Cleveland Elbow Mfg. Co. has been incorporated; $7,000; by A. Kolinsky, Arthur A. Neigher, Myrtle Job, Maurice Bruml, Max Fishel.

CLEVELAND.—The Chandler Motor Car Co. has been incorporated to manufacture automobiles; $425,000; by F. C. Chandler, C. A. Emise, Samuel Regan. Location of plant not definitely decided.

CLEVELAND.—The Berg-Clark Electric Co. has been incorporated to do electrical construction and repair work; $5,000; by Conrad Berg, William R. Clark and F. B. Evarts.

CLEVELAND.—The Chisholm & Moore Mfg. Co. has awarded the general contract to the George B. McMillan Co. for the erection of a two-story building, 50 x 80 feet, of brick and concrete construction, to be used as a core room and storage building. The new structure will replace that part of the foundry badly damaged by fire some time ago.

CLEVELAND. — The M. & M. Co., a supply house, has purchased all the stock and equipment of the Owen Motor Car Co., formerly of Detroit. The stock includes the machinery and all parts, the entire lot being valued at approximately $300,000. It will require more than 100 freight cars to transport the machinery and material to Cleveland from Lansing, where it had been taken. The same company recently cleaned up the effects of the Elmore Mfg. Co., of Clyde.

CLEVELAND.—The Bruce-Macbeth Engine Co. recently received an order for an engine from the Wheat's Ice Cream Co., Buffalo, making the seventh Bruce-Macbeth Engine ordered by that company. Cleveland companies which recently placed orders with the Bruce-Macbeth company include: The Grabler Mfg. Co., the H. C. Tack Co., the Willard Storage Battery Co., the Frost Wire Fence Co., the Cooper Spring Co., the Guide Motor Lamp Co., the Ranney Fish Co., and the Tinnerman Steel Range Co.

CLEVELAND.—The Baker Engineering Co. has been organized and has opened offices in the Citizens building, Cleveland, and at

519 Park building, Pittsburgh. I. H. Baker and F. B. Allen will have charge of the Cleveland and Pittsburgh offices, respectively. The company has been appointed direct selling agents for the C. H. Wheeler Mfg. Co., Philadelphia, manufacturer of condensers, cooling towers, and auxiliary apparatus; the Kerr Turbine Co., Wellsville, N. Y., manufacturers of high and low pressure turbines up to, and including, 1,000 horsepower; the Wilson Snyder Centrifugal Pump Co., Pittsburgh, to handle pumps designed by Albert E. Guy, and the Warren Webster & Co., Camden, N. J., manufacturer of feed water heaters, and oil and water separators. The Baker company will not handle products of the Kerr Turbine Co. and the Wilson Snyder Centrifugal Pump Co., at Pittsburgh, where both concerns have individual sales offices.

COLUMBUS.—The Rogers Supply & Tire Co. has increased its capital from $10,000 to $25,000.

COLUMBUS.—The wire department of the Columbus Bolt Works, Chestnut between Gorman and Water streets, was badly damaged by fire recently.

COLUMBUS.—The Climax Machine Co. has been incorporated; $10,000; by Edward P. Rickert, John L. Hoenchie, Victor C. Lynch, Harry T. Gettins, N. L. McDonnell.

COLUMBUS.—L. P. Stephens, receiver of the Columbus, Urbana & Western Traction line, is soon to invite bids for the extension of the line from Fishingers bridge, near the Scioto river storage dam, to the girl's industrial home, at Delaware. The cost will be approximately $286,000. Receiver's certificates for this extension have been authorized.

COSHOCTON.—The United Service Co. is planning to construct a car line from Dennison to Zanesville, with a central power house at Coshocton, which will supply electric current to Dennison, Urichsville, New Philadelphia, Canal Dover and Cambridge. L. H. Conklin and J. E. Hill, of Scranton, and S. E. Foster, of New York City, are reported to have announced this arrangement after a conference with C. H. Howell, maanger of the Coshocton plant.

DAYTON.—The Ritchie-Wertz Co. is to build a modern power plant to serve its own and adjacent plants.

DAYTON.—The Owl Manufacturing Co. has been incorporated to manufacture novelties; $25,000; by Charles M. Brehen, Cloyd A. Donovan, Ray L. Hohler, Edw. E. Burkhart, Charles D. Heald.

DAYTON.—The Worthington Motor Co., New York City, has been awarded the contract for furnishing meters for the waterworks department at Dayton, except the 1-inch and 1½-inch sizes, the contract for which was secured by the Buffalo Meter Co., of Buffalo, N. Y. The double contract will amount to about $16,000.

ELYRIA.—The Machine Parts Co. has increased its capital stock from $125,000 to $250,000.

ELYRIA.—The Worthington Ball Co., recently a loser by fire, has re-incorporated with a capital stock of $75,000; by George Worthington, Howard Barbour, R. H. Rice, Fred Coulson, L. B. Fauver.

FOSTORIA. — City Engineer Charles A. Latshaw has had a conference with the state officials on the proposition to improve the sewage disposal plant. It is suggested that the plant be electrified, and the engineer is preparing his plans in accordance with the suggestion.

HARRISON.—County Commissioner George Wolf has stated that arrangements for the construction of a bridge over Johnson's Fork will be made at once. The structure will cost about $3,000.

LIMA.—The Chicago & Erie Railroad Co. has decided to build a $75,000 subway under its tracks at Metcalf street. This decision was reached after a conference between members of the city council and W. O. Johnson, of Chicago, chief counsel, and J. W. Halfhill, of Lima, local counsel for the road. The company will pay 65 per cent of the cost.

LORAIN.—The service director is contemplating the addition of a boiler room and cold storage room to the municipal water pumping plant. The city council has appropriated $7,000 for this addition.

MARION.—William T. Moloney, appointed by the court to appraise the property of the Columbus, Marion & Bucyrus railroad, has filed a report showing the total appraisement to be approximately $155,000.

MIDDLETOWN.—Miami Cycle & Mfg. Co. has increased its capital from $1,100,000 to $2,064,500.

NELSONVILLE.—F. S. Scott, clerk of the city council, has stated that an emergency resolution has passed the council declaring it necessary to purchase a new pump for the waterworks department.

NEW PHILADELPHIA.—The city council failed to pass an ordinance authorizing an expenditure of $11,000 for a new 3,000,000 gallon steam pump for the waterworks plant, as outlined by City Engineer Arnold in the plans which he submitted.

PIQUA.—The C., H. & D. Railroad Co. has presented to the city council its plans for the elimination of grade crossings in that city. According to these plans there will be two track elevations and two subways.

PIQUA.—The Piqua Handle Mfg. Co. has engaged Wernette & Bradfield, Grand Rapids, Mich., as consulting engineers in the developing of its water power enterprises on the Ohio river. The company has plants at Thompsonville, Mich., Osceola, Ark., and Piqua.

PLEASANT CITY.—The town board has sold $15,000 worth of bonds for installing a waterworks plant. The plans are being made, and the contract soon will be awarded.

PORTSMOUTH. — General Manager Raymond D. York, of the Portsmouth Street Railway Co., states that the company is considering plans for building a traction line to Jackson, and will ask the council of that village for the necessary franchises.

SANDUSKY.—The Pennsylvania docks will be improved extensively before the opening of the navigation season, the capacity being practically doubled and new loading machinery added, which will greatly facilitate the loading of coal into vessels.

SPRINGFIELD.—E. C. Walker, consulting engineer, has submitted a report on the repairs for gas kiln engine and waterworks plans. The repair to the engine will amount to $9,500, according to the report.

TOLEDO.—The Toledo Shipbuilding Co. has delivered to the Mackinac Transportation Co., the new steel car ferry Sainte Marie which it has been building. The ferry is 259 feet long and will carry fifteen cars.

TOLEDO.—The Toledo Steel Casting Co. is extremely busy, operating at full capacity and with more orders on its books than ever before in its history. The concern manufactures castings for machinery and automobile and motor truck factories. An addition recently was built, 80 x 110 feet, increasing the capacity about 15 per cent.

TOLEDO. — The Fath Construction Co., Cleveland, has been awarded the contract for the removal of the Cherry street bridge to Ash and Consaul streets, at $62,118. The contract for the concrete work was awarded to the Shaw Thorn Co., Toledo, at $74,000; for the new span, to the Toledo Bridge & Crane Co., at $17,600; and for the paving, to Russell & Jennison, at $26,500.

TOLEDO. — New additions are being planned for the Owens Bottle Machine Co., on Libby street, new contracts making the increased room an absolute necessity. The factory will cost about $25,000 and the Schmidt-Harwood Co. has been awarded the contract which was placed by the De Vore-McGormley Co. New machinery will be installed.

YOUNGSTOWN.—The William Tod Co. is completing two air furnaces which will increase its melting capacity to a considerable extent, and furnish an up-to-date system of foundry work.

YOUNGSTOWN.—The Republic Rubber Co. has placed an order with the Hoppes Mfg. Co., represented by E. J. Deckman, 1417 Oliver building, Pittsburgh, for a low pressure steam separator for a 1,000-kilowatt turbine.

YOUNGSTOWN.—The Youngstown Falcon Bronze Co. has given the steel contract to the Hunter Construction Co. for an addition to its plant. The addition is to be 40 x 100 feet, to provide space for additional foundry work. Work will start April 1. Gus Doeright, 218 South Phelps street, is president and general manager.

YOUNGSTOWN.—Harry W. Lindsay, said to represent the Youngstown Seamless Tube & Iron Co., has just purchased the King farm east of Lowellville, and adjoining the new power house of the Republic Heat & Light Co., as a site for laboratory and shops. The Youngstown Seamless Tube company was incorporated under the laws of Ohio some weeks ago by Frank E. Simkins, H. W. Lindsay, J. W. Wicks, R. H. Miller and J. M. Thomas.

YOUNGSTOWN.—Officers and stockholders of the Knox Pressed & Welded Steel Co. have decided to rebuild the works at Niles, O., recently destroyed by fire. The new buildings will be three stories, of reinforced concrete. A two-story brick office building will be erected and the main offices moved from Pittsburgh to Niles. The contract has been let to the Pennsylvania Engineering Co., of New Castle, Pa. It is estimated that the plant will cost $130,000.

YOUNGSTOWN.—At the offices of the Republic Iron & Steel Co. it was announced recently that the new 8-10-inch combination mill at the Brown-Bonnell works of the Republic Co. at Youngstown will be completed and ready for operation by April 1. This continuous mill will be equipped with 10-inch roughing rolls and 8-inch finishing. The new 12-inch mill will be finished by April 15, according to the program and the 16-inch and 20-inch mills by Aug. 1. These four mills replace the old 12-inch, 10-inch, hoop mill and universal mill, razed at the Brown-Bonnell plant during last summer.

OKLAHOMA

GUTHRIE. — The Thomas Railway Appliance Co. has been incorporated; $100 000; by John W. Thomas, Kansas City; J. R. Hamill, Guthrie; Fred W. Green and C. G. Homer, Guthrie; G. G. Austin, Kansas City, Mo.

SAPULPA.—The Charles Tenon Machine Co. has been incorporated; $6 000; by Charles E. Volk, Charles C. Cox, W. L. Evans and Louis Johnson.

OREGON

ALBANY.—Louis Kelsey, consulting engineer of Portland, has just completed plans and specifications for a municipal power plant for this city.

LATHAM. — Improvements soon will be made at the saw mill of J. H. Chambers. An additional engine, boiler, a resaw, a planer, and a dry kiln will be added.

PORTLAND.—The North Pacific Gas &

Electric Co. has been incorporated to furnish water, gas, electricity, light and heat in Oregon and adjacent states; $1,000,000; by C. J. Franklin, F. L. Shulb, H. E. Lunsberry, Portland; W. W. Seymour, F. C. Brewster, Tacoma, Wash.

PENNSYLVANIA

BRIDGEPORT. — The Gehret Bros. has been incorporated to deal in iron and steel structural material; $80,000; by George Gehret, Mahlon P. Gehret, C. A. Gehret, Augustus R. Gehret and J. K. Gehret.

BUTLER. — The Forged Steel Wheel Co. is equipping the power plant of its new steel mill with three 2,500-kilovolt-ampere Curtis turbo-generator units, a 75-kilowatt induction motor-generator set, 320 kilovolt-ampere motor motor-generator set, and a 320-kilovolt-ampere motor generator set and switchboard. Among the large motors throughout the mill are included one of 2,000 horsepower, one of 1,000 horsepower, one of 800 horsepower, and one of 600-400 horsepower. All this apparatus will be built and installed by the General Electric Co.

CARLISLE.—The plant of the Cooper Heater Co., a newly constructed building, was damaged by fire recently. The stock room of the Frog Switch & Mfg. Co., in the same building, suffered severe damage.

CHESWICK.—The Hulton Iron Co. has secured a site of three and one-half acres with buildings and will engage in the manufacture of wrought iron. The output at the start will be restricted to blooms and bars of high quality. V. C. Getty is president and John Sutch is vice president of the company.

DUNBAR.—The Dunbar Furnace Co. has installed a conveyor at its Semet-Solvay plant, extending from the crushed coke bins to the point where fuel is loaded into cars.

EASTON.—The Hawley Down Draft Furnace Co., recently organized with a capital of $100,000, as noted in THE IRON TRADE REVIEW, issue Feb. 27, advises that it has already made a shipment of metal melting furnaces to Australia, and also a large furnace in Manchester, Eng., and another to New Zealand. This company was formerly located in Chicago.

ERIE.—The Maiwurm Aluminum Co. has increased its capital from $10,000 to $25,000.

ERIE.—The Wire & Metal Wares Co. has been incorporated; $10,000; by Otto G. Hitchcock, G. W. Heichert, Joseph J. Roll, Robert C. French, Erie.

HARRISBURG.—Charters were issued recently to 12 electric companies, to furnish light and power in Washington county, the companies taking their names from their districts as follows: Charleroi, Carroll, Allen, Donora, East Pikes Run, East Bethlhem, Fallowfield, North Charleroi, Monongahela City, New Engle and Speers, together with the Crystal of Union township. The capital stock of each company is $5,000. The offices are located in Pittsburgh.

JOHNSTOWN. — The Cambria Steel Co. has closed negotiations for two 15-ton and two 20-ton cranes to be installed in plants at that city. The order was placed with the Alliance Machine Co., Alliance, O.

LANCASTER.—The Safety Mfg. Co., Inc., has been incorporated with a capitalization of $100,000, to undertake the general manufacture of malleable and brass castings, nut lock safety appliances, and a vacuum sweeper. The company has purchased the foundry building, 62 x 152 feet, and machine shop, 36 x 114 feet, formerly owned by the Independent Foundry Co., manufacturer of soil pipe. An additional brass foundry, 40 x 80 feet, is being erected. A. G. Hostetter, president; Edward Gish, vice president; W. E. Horner, treasurer; John Kaufmann, secretary. Offices are at 329 Woolworth building, Lancaster.

LEBANON.—The Cornwall, Rexmont, East Cornwall and South Londonderry Electric Light, Heat & Power Cos. have been incorporated to operate in Lebanon county; $5,000 each; main office in Lebanon.

MEADVILLE.—Plans of Edward A. Phillips of New York City for the new buildings of the Bronze Metal Works have been approved. T. F. Secrist, superintendent of the plant, will have charge of construction. The added floor space will be about 15,000 square feet. Power machinery will be used, including a number of electric trucks for handling metal. Plans for a new boiler plant will be ready soon. Edward Fallows is president and Alex Turner general manager.

MIDLAND.—The Pittsburgh Crucible Steel Co. has ordered a 5-ton and a 20-ton electric traveling crane from the Alliance Machine Co., Alliance, O., for installation in the new Midland plant of the company, which is expected to be in operation June 1. The company is expected to soon close for 23 cranes of various capacity for this plant.

MT. CARMEL.—Albert P. Grimm, who has been foundry foreman of the Mt. Carmel Iron Works for a little more than a year, has formed and successfullly carried out, a plan of purchase of the Mt. Carmel Iron Works in which a large proportion of the employes are part owners, including the heads of all departments and a great many of the mechanics. Mr. Grimm, who has held responsible positions with other iron works, is president and general manager; Peurie Andrews, engineer, is vice president and works foreman; Fred Schneider; molder, is secretary, and C. A. Gable, treasurer. These officers, with Harry Wetzel, foundry foreman, William Thomas, machinist, and Andrew Madden, comprise the board of seven directors. The change became effective Feb. 1, and the indications are that the plant will be very successful. The company plans ultimately to equip its plant with electric power, and is in the market at the present time for an electric generator, and wishes to dispose of a 100-horsepower boiler recently installed, together with engines, pumps, etc.

NEW CASTLE.—The New Castle Steel & Iron Co. has increased its capital from $10,000 to $230,000.

NEW CASTLE.—The Pennsylvania Power Co., a subsidiary of the Mahoning & Shenandoah Valley Light Co., is making a survey for a dam on the Shenango river near Hazel Dell.

NEW CASTLE.—A transfer of the property of the New Castle Forge & Bolt Works to the New Castle Steel & Iron Co. for $115,000, has been recorded. The latter company purchased the property at a receiver's sale some time ago. The new company, which is headed by Pittsburgh capitalists, will manufacture nuts, bolts and car appliances. Announcements of the detailed plans were given in THE IRON TRADE REVIEW several weeks ago.

NORRISTOWN. — Under an arrangement with the Reading company the power from the hydro-electric plant at North Manayunk of the Philadelphia Hydro-Electric Co., will be increased by 1,000 kilowatts. The Norristown Power Co. is to erect a plant at the Schuylkill river dam at Norristown to develop 1,500 kilowatts; probably a third plant will be built at the Conshohocken dam on the Schuylkill to develop 7,500 kilowatts.

PHILADELPHIA. — The American Road Machine Co. has increased its capital from $792,300 to $825,900.

PHILADELPHIA.—The Globe Electric Co. has been incorporated to manufacture and deal in motors and dynamos; $25,000.

PHILADELPHIA. — The Philadelphia Equipment Co. has been incorporated; machinery, tools, etc.; capital stock $15,000.

PHILADELPHIA.—The Bowers Emery Irons Co. has been incorporated to conduct foundry, machine and metal working plant; $50,000.

PHILADELPHIA. — The Keystone Metal Bed Co. has been incorporated to manufacture and deal in beds and bedding furniture; capital stock, $100,000.

PHILADELPHIA. — The Philadelphia Enameling Works has been incorporated; $15,000; by Albert Rosenstein, Edwin Boath, H. G. White, Philadelphia.

PHILADELPHIA.—The machine forging plants of A. S. Ashman Sons & Co., Tulip and Tioga streets, were recently damaged by fire to the extent of $15,000.

PHILADELPHIA. — The Philadelphia Equipment Co. has been incorporated to conduct a business in machinery and tools; $15,000; by William M. Mullen, Oakmont; H. Stephens, Morin S. Hare, C. R. Brown, Philadelphia; J. M. Haile, New York.

PHILADELPHIA.—The Turner Concrete Steel Co. began work recently on the reinforced concrete beams, girders and floor slabs on the $240,000 building being erected on the south side of Wallace, between Broad and Fifteenth streets, for George F. Lasher.

PHILADELPHIA.—The Richmond Radiation Co., Broadway, New York, has awarded a contract for a one-story factory building, 100 x 355 feet, to Harry H. Alchmyer, Philadelphia. The building will be erected on a six-acre tract at State road and Devereaux street, Philadelphia, and is estimated to cost $50,000.

PITTSBURGH. — The Pressed Metal Radiator Co. has been authorized to increase its debt by $250,000.

PITTSBURGH. — The Locomotive Stoker Co. has increased its capital stock from $5,000 to $1,750,000.

PITTSBURGH. — The Pittsburgh Cold Rolled Steel Co. has increased its capital from $50,000 to $150,000.

PITTSBURGH.—The Harbison-Walker Refractories Co. has ordered two 50-horsepower engines for its Templeton Works from the Bessemer Gas Engine Co.

PITTSBURGH.—The Havana Electric Railway & Light Co., Havana, Cuba, has ordered from the Westinghouse Electric & Mfg. Co. 50 double equipments of motors.

PITTSBURGH.—An addition, 100 x 300 feet, to the plant of the Fort Pitt Mfg. & Spring Co. is rapidly nearing completion. The company manufactures coil and elliptic springs.

PITTSBURGH.—The Montour Railroad, owned by the Pittsburgh Coal Co., has awarded the grading contract for its 34-mile line to John Marsch, Chicago, for $1,500,000.

PITTSBURGH.—The Pittsburgh Crucible Steel Co. will install 115 motors, ranging from 5 to 105 horsepower, in its mill at Midland. All the motors will be furnished by the General Electric Co.

PITTSBURGH.—The Infallible Fire Alarm Co. has been incorporated under the laws of West Virginia to manufacture fire alarms; $10,000; by J. H. Tinker, Ralph Little, Lloyd L. Little, Paul C. Little, M. E. Davis, all of Pittsburgh.

PITTSBURGH.—The H. J. Heinz Co. will build an addition to its power plant consisting of a new seven-story building, 60 x 130 feet, of steel, brick and concrete construction. An order for the installation of five 600-

horsepower Heine water tube boilers has been placed with the Pittsburgh office of the Heine Safety Boiler Co. A full equipment of mechanical stokers will be purchased.

PITTSBURGH.—The Westinghouse Electric & Mfg. Co. reports the recent sales of the following turbo-generators: The United Electric Light & Power Co., New York City, one 22,200-kilowatt, 11,000-volt; the Public Service Co. of New Jersey, Marion Station, N. J., one 22,000-kilowatt, 13,200-volt; the Duquesne Light Co., Pittsburgh, four 18,000-kilovolt-ampere; the West Penn Traction & Light Co., Pittsburgh, 14,400-kilovolt-ampere; the Moline & Rock Island Mfg. Co., Moline, Ill., one 13,100-kilovolt-ampere.

READING.—The Metropolitan Electric Co. has decided to rebuild its plant on the Schuylkill river below Reading.

READING.—The Reading Heater & Supply Co. has increased its capital from $5,000 to $14,000.

ROCHESTER.—The capacity of the Pittsburgh Emery Wheel Co., Pittsburgh, has been increased by about 25 per cent by the erection of several new buildings at Rochester. Equipment for the new buildings already has been ordered.

TARENTUM.—Foundation work is to be started at an early date for a modern foundry building for Yost Bros., Hite Station, whose loss by fire was noted in THE IRON TRADE REVIEW, Feb. 6, and new construction noted Feb. 20. The new plant will be larger than the one recently destroyed.

WILMERDING.—The Westinghouse Air-brake Co., Pittsburgh, has completed plans for a new two-story foundry building, 60 x 300 feet, to be built at Wilmerding. Two 5-ton and two 1-ton electric traveling cranes are included in the equipment to be installed.

RHODE ISLAND

CENTRAL FALLS. — The Newell Brass Foundry Co. has approved plans for its new building and will award a contract for the construction of the same within a short time.

SOUTH CAROLINA

CHARLOTTE. — The Southern Power Co. has completed plans for a hydro-electric plant at Lookout Shoals on the Catawba river near Statesville. The present equipment will be four units of 400 horsepower each. W. S. Lee, chief engineer of the company, is in charge.

COLUMBIA.—The Columbia Gas & Electric Co. has acquired the Parr Shoals Co. and will start at once to construct a hydro-electric station on the Broad river, 20 miles north of Columbia. It is planned to develop eventually 25,000 horsepower.

SOUTH DAKOTA

TWIN BROOKS.—F. L. Stewart is planning to open a machine shop at Twin Brooks.

TENNESSEE

CHATTANOOGA.—The Chattanooga Water Co. will extend its mains a mile in order to reach the Chickamauga park district.

CHATTANOOGA.—A cold storage plant will be constructed and equipped by the Chattanooga Warehouse Co., of which J. T. Lupton is manager. The plant will cost in the neighborhood of $100,000.

CHATTANOOGA. — The Sugar Valley Brown Ore Mining Co. has been organized with a capital of $100,000, with which it plans to build a standard gage railroad line to give access to an area of 760 acres of ore bearing land recently bought near Sugar Valley, Ga., and also erect a mining plant.

CLARKSVILLE.—Montgomery county is considering issuing $175,000 of bonds for the construction of a bridge over Cumberland river at that point. The county offices are at Clarksville.

KNOXVILLE.—The Imperial Realty Co. plans the construction of a 12-story hotel building at a cost of $750,000. J. B. Jones is president of the compony, which will begin work later in the year.

NASHVILLE.—Thomas Goodall will install a sawmill on a large tract of timber in Bibb county, Ala., which he recently purchased.

NASHVILLE.—According to plans announced by the Fite estate a 21-story office building will be erected at Second and Union streets. The building will cost approximately $500,000.

NASHVILLE.—R. H. Evans, of Detroit, Mich., has bought a site here for a proposed plant for the manufacture of the Evans line of automobiles, at a cost of $200,000. Offices are with Everett Philpott & Co., 227 Third avenue north.

NASHVILLE.—T. J. Crane, president of the Crane Spring Steel Fence Co., Cleveland, is interested in the establishment of a plant at Nashville for the manufacture of woven wire fencing. The Nashville Industrial Bureau probably will lend some assistance.

TEXAS

ANGLETON.—The Angleton Gin & Power Co. is to install machinery shortly for a new generating and distributing plant.

BIG SPRINGS.—L. L. Stevens, who controls the electric plant of the Yoakum Improvement Co., Yoakum, Tex., is planning to increase its equipment materially.

BROWNVILLE.—The Peoples Ice & Mfg. Co. has increased its capital stock from $100,000 to $150,000.

DALLAS. — The Austin-Western Road Machinery Co., of Chicago, with a capital stock of $20,000, has been granted a permit to do business in Texas. Headquarters will be at Dallas.

DE LEON.—The De Leon-Gorman Light & Power Co. has been incorporated; $20,000; by W. E. Lowe, J. T. Collie, W. M. Collie.

FORT WORTH. — The Ellison Furniture & Carpet Co. has let the contract for a factory and storage building to replace that lately destroyed by fire. The contract went to the Bryce Construction Co., at approximately $40,000. The machinery will represent an investment of $10,000 to $15,000. The factory will be at the corner of Fifth and Pecan streets, and construction work will begin at once.

HOUSTON.—The Wylie Kennedy Co., 411 Beatty building, is inquiring for a 10 x 12 double drum hoisting engine, without power.

HOUSTON.—The Shippers' Compress Co. has bought from the Cleveland Compress & Warehouse Co. its former compress site with the purpose of erecting a plant.

ORANGE.—The Orange Iron Works recently installed a complete keyseat machine and a jointer for use in its pattern house. This concern also recently installed one of the latest models of oil burning engines.

RUSK.—Fire in the machine shop of the state penintentiary recently caused a loss of $50,000.

UTAH

OGDEN CITY.—The Australian Iceless Refrigerator Co. has been incorporated to manufacture a refrigerator in which ice is not used; $20,000; president and manager, C. E. Brooks; vice president, Dr. Waltern E. Whalen; secretary-treasurer, S. H. Browne.

VIRGINIA

NORFOLK.—The Kinston Carolina Railroad & Lumber Co. advises that it is occasionally in the market for railroad supplies. W. H. Ransons is purchasing agent.

REMINGTON.—The Remington Light & Heat Co. has been incorporated; $2,000; president, J. T. Morton; vice president, J. R. Culp; secretary-treasurer, W. Ashby, all of Remington.

RICHMOND.—The Old Homestead Mfg. Co. has increased its capital from $20,000 to $50,000.

RICHMOND.—The Davis Hotel Co. will build a seven-story hotel replacing one which is to be torn down. Carneal & Johnson are the architects.

WASHINGTON

ABERDEEN.—The city council is considering a municipal lighting proposition.

DES CHUTES.—The Des Chutes Power Co. has been incorporated; $300,000; by Samuel and Adolph Galland.

TACOMA.—The Nickerson-McFarlane Machinery Co. will spend about $40,000 on its new four-story machine shop and equipment. The plant is being built near the Northern Pacific railroad tracks at Fifteenth and Dock streets.

TACOMA.—Plans have been filed by the Oregon-Washington Railroad & Navigation Co. for the construction of a steel bridge across the waterway at a cost of $350,000. The bridge, to be built this summer, will be placed at Fifteenth street and will connect with the company's new terminal freight sheds.

WEST VIRGINIA

CHARLESTON.—The Corliss Rotary Engine Co., of Providence, R. I., has been granted a charter for $3,500,000 to do business in West Virginia.

CHARLESTON.—The Claybrook Coal Mining Co. has been incorporated to mine coal; $100,000, by J. E. Chilton, John A. Thayer, S. B. Chilton, S. Hess, T. S. Clark, all of Charleston.

FAIRMONT.—The Willett Clay Co. has been incorporated to manufacture clay products; $100,000.

FAIRMONT. — The Monongahela Valley Traction Co. has ordered from the Westinghouse Electric & Mfg. Co., Pittsburgh, four quadruple equipments of motors.

GRAFTON.—The Winona Coke & Coal Co., which operates mines and a plant of 30 ovens at Coffman, contemplates the building of 50 more ovens. The new plant will be equipped with mechanical coke drawers and loaders.

PARKERSBURG.—The Trans-Appalachian railway has been chartered with a capital of $500,000 to build a line from Parkersburg via Marlinton to Covington, Va., a distance of over 150 miles.

PARKERSBURG.—The Parkersburg, Marietta & Suburban Railway Co. is undertaking the construction of several new cars and rebuilding a number of old ones. General Manager H. H. Archer has stated that the new cars are of the latest type and will be used exclusively for freight.

SPRINGFIELD.—The Magnolia Power Co. has been incorporated to produce and sell electric power; $100,000; by Peter J. Seaver, Cyril B. Geare, Albert M. Diehl, William E. Walsh, F. Ernest Brackett, all of Cumberland, Md. This company is planning to erect a large hydro-electric plant on the South Branch of the Potomac river, near

Springfield, to supply commercial current to Romney and Springfield.

WEIRTON.—The Weirton Steel Co. is adding to the equipment of its plant for electric drive two 750 kilowatt motor-generator sets, six 50-horsepower, six 150-horsepower, four 300-horsepower, nine 25-horsepower and two 10-horsepower motors and switchboard apparatus. All the equipment will be supplied and installed by the General Electric Co.

WHEELING.—The Wheeling Valley Light & Power Co. has been incorporated; heat, light and motive power; $50,000; by M. S. Jones, J. W. Adams, H. L. Bond.

WISCONSIN

AUGUSTA.—The Augusta Light & Telephone Co. has been incorporated to establish light and telephone service; $40,000; by Assemblyman E. J. Kneen of Bangor, and others.

BEAVER DAM.—The Paramount Metal Form Drying Co. has bought the building formerly owned by the Beaver Dam Woolen Mills Co. and will manufacture apparatus for drying and finishing hosiery.

BELOIT. — The Northwestern Molding Sand Co. has been incorporated with $75,000 capital by W. S. Perrigo, H. W. Adams and Charles H. Shaw.

FOND DU LAC.—The city water commission awarded the contract for furnishing and installing a central air compressor and air lift equipment for six artesian wells of the municipal waterworks system to the Ingersoll-Rand Co., of Chicago, at $11,107.

GREEN BAY.—M. D. Keith states the Wisconsin & Michigan Railroad Co., of which he is a director, will extend to Crandon this year.

GREEN BAY.—The city is making preliminary plans for the construction of a new steel bascule bridge over Fox river at Mason street.

GREEN BAY.—The Up-to-Date Machine Co. has been incorporated; $25,000; by C. J. Chloupek, F. L. McKillip and A. M. Johnson. A shop is now being equipped for the manufacture of articles designed by Mr. Chloupek.

KENOSHA.—The Lippert-Rhenstrom Co., manufacturing spring and spring bed machinery in temporary quarters at Chicago, will move to Kenosha on or about May 15 and occupy a large factory building now under construction. The company was organized several months ago by A. C. Lippert and Anthony Rhenstrom, both of Kenosha, and for many years associated with the Frank L. Wells Co., manufacturing a similar line of goods. Mr. Lippert was formerly secretary of the Wells company, and Mr. Rhenstrom, chief engineer. Contracts for the equipment have already been placed.

LA CROSSE.—The McKenzie Mfg. Co. has bought a site for the construction of a modern factory to double its output of farm implements.

MANITOWOC. — The Aluminum Goods Mfg. Co. has received plans for additions from its architect, C. H. Tegen, Manitowoc, and will construct a two-story wing, 200 x 50 feet, to cost $40,000. The wing will complete the original factory plan laid out by the company a year ago, when its present plant was erected.

MERRIMAC.—A bill providing for an appropriation of $95,000 for the construction of a steel bridge over Wisconsin river at Merrimac is before the Wisconsin legislature. The Wisconsin State Highway commission is entrusted with the preparation of plans, awarding of contracts and supervision of the work. John A. Hazelwood, Madison, is chairman of the commission.

MILTON.—The Burdick Cabinet Co. has been organized to establish a plant for the manufacture of electric bath cabinets and other medical, sanitary and hygienic appliances. The concern has incorporated with a capital stock of $150,000 and is backed by Paul M. Green, B. H. Wells, T. A. Saunders, J. G. Carr, of Milton, and Dr. A. S. Maxson and Prof. Allen B. West, of Milton Junction. A site for the proposed factory has been purchased. It is midway between Milton and Milton Junction, Rock county.

MILWAUKEE.—A. J. Earling, president of the C. M. & St. Paul Railway Co., has stated that the work of track elevation, involving an expenditure of $625,000, will be started about July 15, 1913.

MILWAUKEE.—The Milwaukee Fiber Co., owned by Edward J. Koch, has been made defendant in involuntary bankruptcy proceedings on petition of three creditors, the Tures Mfg. Co., The Stenz Electrical Co., and the Leading Machinery & Supply Co.

MILWAUKEE.—The Camp estate is considering plans for a reconstruction of the Camp building at East Water and Wisconsin streets, with the alternative of constructing an entirely new 16-story steel skeleton building, 120 x 150 feet. Robert Camp, care First Savings & Trust Co., is trustee.

MILWAUKEE.—The city will soon call for bids for furnishing the material and doing the work of erecting fire escapes on the city hall and municipal building, eight stories, situated at Market, East Water and Oneida streets. F. G. Simmons is commissioner of public works. The appropriation is $5,000.

MILWAUKEE.—The school board is preparing to call for bids on a new $425,000 Riverside high school, according to plans and specifications prepared by Van Ryn & DeGelleke, architects. Frank H. Harbach is secretary of the board and Carroll G. Pearse is superintendent of schools.

MILWAUKEE.—Fred Sprinkmann & Son, manufacturing steampipe and boiler covering, magnesia and asbestos goods, have purchased a factory building and additional acreage at South Milwaukee and will move their works to that point at once. The present quarters at 266-276 East Water street will be continued as city office and shipping rooms, and all manufacturing will henceforth be done at South Milwaukee.

MILWAUKEE.—The Hotel Wisconsin Co., which is erecting a 12-story steel skeleton hotel on Third street, just north of Grand avenue, has purchased the adjoining site, upon which the Gross Hardware Co. intended to erect a 10-story steel skeleton building, and will double the size of the hotel building. The structural steel requirements are taken care of under an agreement to use the Gross company's contract for structural material in the construction of the hotel. The Con. Raulf Construction Co. is contractor. Arthur L. Richards is president of the hotel concern.

MILWAUKEE. — Plans and specifications for the proposed new Linwood avenue intake and tunnel of the municipal waterworks have been completed by J. A. Mesiroff, city engineer, and are in the hands of F. G. Simmons, commissioner of public works, who will issue the call for bids on the various divisions of the work within two or three weeks' time. The tunnel will have a capacity of 225,000 gallons each 24 hours. It will be 4,000 feet long and 12 feet in diameter and extend into Lake Michigan at the foot of Linwood avenue. The cost is estimated at $450,000.

MILWAUKEE.—Preliminary plans for the proposed new $500,000 Thirty-fifth street-Thirty-first avenue viaduct over the Menomonee valley, have been outlined by the department of bridges and viaducts of the commissioner of public works' division. The viaduct will be 3,750 feet long, 60 feet wide, with a 40-foot roadway carrying double electric railway tracks, and two 10-foot walks. The structure will be of steel, with concrete floors. The common council intends to arrange its share of the details so that work may be started about March 1, 1914, on the actual construction work.

PALMYRA.—A special election will be held in April on the question of constructing a municipal waterworks and sewerage system.

PORT WASHINGTON.—The Turner Mfg. Co., manufacturing gasoline engines, has recently increased its activities and is now producing a line of engines rating from two to 20 horsepower. The shops are being gradually enlarged to cope with the additional business. Two new Canadian branches have been established, one at Winnipeg and the other at Hamilton.

RACINE.—Hanley Bros., commission merchants, with branches in Kenosha, and Chicago, Ill., are preparing to build a new refrigerator and cold storage plant with ice-making machinery.

SUPERIOR.—The Allouez Bay Dock Co., a subsidiary of the Great Northern, has increased its capital stock from $100,000 to $4,000,000. Louis W. Hill is president and J. H. Gruber secretary. The company some time ago started work on important changes and new construction on its ore dock properties on Allouez bay, Superior.

WAUKESHA. — The International Steel Erection Co. has been incorporated; $10,000; by I. G. Brown, Frank McLaughlin and G. B. Harding.

CANADA

ALBERTA

CALGARY.—The Calgary Power Co. will have a new power unit in operation in June, according to the statement made by President R. B. Bennett, M. P., at the annual meeting of the company in Calgary. It was found necessary during the year to provide for an addition of 6,000 horsepower to the capacity of the Horse Shoe Falls plant and orders for the additional equipment have been placed. Even with this, however, the demand for power is still too great and the directors have therefore decided to double the company's present minimum capacity at an estimated expenditure of about $1,000,000 by developing another power at Kanamaskis Falls, two miles from Horse Shoe Falls.

EDMONTON.—The Dickson Bridge Co. of Campbellfort, Ont., has arranged for early installation of a plant at Edmonton, to give employment to 200 men. The buildings to be erected will cover three acres.

MEDICINE HAT.—Expenditures of $125,000 on gas main extensions, $150,000 on water main extensions and $250,000 on sewers will be spent soon. The town is also spending $400,000 on a reservoir, and a new water and electric light plant.

MEDICINE HAT.—The Hunt Engineering Co., which is erecting a large cement plant near Medicine Hat, proposes to build a bridge over Seven Persons Creek at a cost of $300,000, if the city will give a roadway and right for a boulevard through the industrial site.

MEDICINE HAT.—The International Supply Co. has been awarded the contract for boring a number of gas wells at Dunmore, each of which is expected to produce 10,000 horsepower. In the same town the Alberta Window Glass Co. is locating, and will obtain its raw material from Lake Winnipeg. C. E. Ross, of Medicine Hat, is interested.

BRITISH COLUMBIA

NEW WESTMINSTER. — The city will shortly call for tenders for the construction of a scow, 100 feet long, 40 feet beam and 7 fee' 6 inches deep, equipped with dredging machinery for general harbor work.

PORT MANN.—An additional length of 4,000 feet is to be added to the Canadian Northern railway dock this spring. When completed, it will be a mile long. This work is to be carried on in anticipation of the railway to the prairies this autumn, and the establishment here of several large industries, among which is an export mill for the International Milling Co., of Minneapolis, with an initial capacity of 500 barrels daily, which will be built in units to allow of expansion.

VANCOUVER. — The Canadian Northern Pacific railway has prepared plans for the erection of a steel bridge with a 30-foot lift span, over the Salmon river near Langley.

VANCOUVER.—A new transporter bridge having a clear span of 700 feet has been recommended by the district engineer of North Vancouver to be constructed across the Narrows. This would enable communication between Vancouver City, West Vancouver and North Vancouver and would cost about $400,000.

MANITOBA

BRANDON. — The local branch of the George White Co. was badly damaged by fire recently. The warehouse contained many tractors and gasoline engines, which were badly damaged. The loss of $15,000 was covered by insurance.

NOVA SCOTIA

CAPE BRETON.—The Dominion Coal Co. and the Nova Scotia Steel & Coal Co. have opened negotiations respecting their submarine areas in Cape Breton preliminary to a re-arrangement of these coal areas by the Dominion government. Some 20 years ago, the Scotia Co. acquired submarine areas in front of Dominion No. 1 colliery. These it is now considered, would be of much greater use to the Dominion Co. than to Scotia and the government, when approached, suggested that there be negotiations between the companies to settle the matter. Negotiations were commenced, dropped for a time, and, having been revived, will likely go through, the Dominion Coal Co. having modified its first proposals.

TORBROOK.—No. 2 shaft of the Canada Iron Corporation mines lost its hoisting equipment by fire recently.

ONTARIO

BOWMANVILLE.—Tenders will be received by John Lyle, clerk, up to March 19, for the waterworks and sewerage system improvements which will be made and which include laying water mains and sewer pipe, constructing pumphouse and three reservoirs, furnishing iron pipes, hydrants, valves, etc.

FORT WILLIAM.—The Canadian Northern railway will erect a new depot at Fort William, at a cost of $50,000. Superintendent J. E. Nelson, of that company says operations will commence early this year.

HAMILTON.—This city will extend its municipal plant to meet the increased demand for power and light.

HAMILTON. — The Hamilton Mountain Electric Railway Co. will apply for incorporation with power to construct a line from the township of Ancaster to Barton, and branch lines, and dispose of surplus electricity for lighting and power purposes to surrounding municipalities.

HAMILTON.—The city has awarded a contract for transformers for the municipal hydro-electric system to the Canadian Westinghouse Co. for $32,465. The contract for 5,000 meters was divided, part going to the Canadian Westinghouse Co., the Canadian General Electric Co. and the Chamberlain-Hookam Co., the latter an English concern.

HAMILTON.—The big plant of the International Harvester Co, last week commenced to operate on a schedule of five days per week. This affects some 2,500 employes. General Superintendent Biggert states that the company was forced to make this move on account of conditons in the west not coming up to expectations, as a result of which there is a lot of stock on hand.

HESPELER:—Stamped & Enameled Ware, Ltd., Hespeler, Ont., has been incorporated at Ottawa with $250,000 to carry on the business of smelting, casting, forging, rolling, tinning, galvanizing and plating of metals, iron, steel, tin, etc., coal oil and gas stoves. Its incorporators are Geo. D. Forbes, Hespeler, Frederick, George A. and Alfred Clare, of Hamilton.

LONDON.—Plans are ready for a foundry to be built at a cost of $100,000 for E. Leonard & Sons. It will be a two-story building equipped with hydraulic machinery.

LONDON.—Plans have been prepared for a steel bridge by city Engineer Brazier and tenders will be called soon. The bridge will span the Thames river at Wharncliffe road.

LONDON.—The Richards-Wilcox Canadian Co. advises it intends to make in that city the complete line of Richards-Wilcox goods now made at the American factory at Aurora, Ill. A small plant with six acres of land for enlargement has been secured and the machinery necessary to begin operations has been bought.

MIDDLESEX county will replace 12 of the county bridges by new structures of concrete and steel construction. A. K. Hodgins of London township is the warden of the county.

OTTAWA.—Tenders will shortly be called for the construction of the Morrisburg and Ottawa railway from Ottawa to Morrisburg with branch lines to other points in Ontario. Specifications are now being prepared.

OTTAWA.—The new provincial boiler regulations for the Province of Ontario have received their final approval, so that after July 1 every boiler manufactured in Ontario, apart from railway and steamer boilers, which are covered by separate legislation, must be made along standard lines and stand a thorough inspection, not only on completion, but during construction.

PALMERTON. — The elevators and six-story building of the Canada Malting Co. were damaged on Tuesday, March 4. The loss is about $100,000, and is well covered by insurance.

ST. MARY'S.—The capital of the St. Mary's Wood Specialty Co. will be increased in order to purchase an adjoining plant and increase its output.

TORONTO.—The Anchor Mfg. Co., Ltd., is building a new plant at Preston. It will include a machine shop.

TORONTO.—A 20-story building will be erected for J. & L. M. Wood, to be used as an office building.

TORONTO.—Alternative plans and specifications for the construction of the Bloor street viaduct, of both steel and concrete are being prepared with a view to securing tenders on both materials.

TORONTO.—The Canadian Ice Machine Co., has been incorporated with $75,000 capital to manufacture ice making machinery and other supplies; by W. S. Shipley of New York, Charles Allison of Toronto; Arthur Buchanan, K. C., of Montreal, and others.

TORONTO.—Engineer James and Traffic Manager Wilson, of the York Radial Electric line, Toronto, have been conferring with the council of North Toronto with a view to making changes in the line. A number of permanent bridges will be required.

TORONTO.—The Canada Foundry Co. is in need of the following machine tool equipment: One high speed planer, two medium planers, two shapers, a keyseater, a grinder, a slab miller, a vertical miller, a horizontal miller, a horizontal drill, two radial drills, a sensitive high speed drill and two small drills.

QUEBEC

COQUITLAM.—Two hundred thousand dollars has been appropriated by the British Columbia government to start work this year in the construction of a railway and traffic bridge across the Pitt river at Coquitlam.

MONTREAL.—Sir William Arrol & Co., Ltd., Glasgow, Scotland, are arranging to establish works at Montreal for the construction of cranes, presses and other machinery.

MONTREAL.—Hyde & Webster, dealers in builders' and founders' supplies, have acquired the old established business of F. Hyde & Co., of Montreal, and under the name of Webster & Sons will carry on the same business in all its branches.

MONTREAL.—The English shipbuilding firm of Swan, Hunter & Wigham Richardson will submit tenders for work on the Georgian Bay canal, if that project is proceeded with by the Canadian government, and for the construction of ships for the proposed Hudson Bay line.

MONTREAL.—The Kelly Tire Co., Ltd., has been incorporated with $50,000 capital to manufacture and deal in automobiles, motor trucks and general motor supplies; by E. M. McDougall, John J. Creelman and Pierre F. Casgrain.

MONTREAL.—That a shipyard which is being constructed by Vickers, Sons & Maxim, the great British ship-building firm, in connection with the big floating dock which recently was towed across the Atlantic and installed there, would be able to undertake the construction of three Dreadnoughts simultaneously was the announcement made in the Canadian senate last week by Senator Casgrain of Montreal.

WESTMINSTER.—The Canadian Pacific Railway Co.'s new terminals at New Westminster, will cost about $3,000,000.

SASKATCHEWAN

MOOSE JAW.—Tenders addressed to the City Commissioners will be received up to March 26 for a fuel economizer with 7,000 square feet heating surface, and an induced draft plant to handle 12,000 cubic feet of gas per minute. Plans and specifications are held by J. D. Peters, electrical superintendent, Moose Jaw. Commissioners: James Pascoe, L. W. Rundlett, and W. F. Heal.

REGINA.—The Emerson-Brantingham Implement Co. of Minneapolis, represented in Regina by the Tudhope-Anderson Co., some time ago shipped 45 carloads of tractors here, claimed to be a record for the shipment of a single commodity.

REGINA.—By-laws were carried last week by the town, authorizing the expenditure of $300,000 on sewers, $35,000 on a bridge on Hamilton street, $200,000 on waterworks, $425,000 on an electric light and power plant, $177,000 on an incinerator, $825,000 on a street railway, $25,000 on gas works, $250,000 on light and power extensions, and $60,000 on a fire hall.